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Help Yourself to Science

by

N. A. WATTS

ORIENT LONGMANS

HELP YOURSELF TO SCIENCE

BOOK TWO

A WORKBOOK TO ACCOMPANY

Adventures in Tropical Science, Book II

By

N. A. WATTS, B.SC., B.T., A.B.T.I.

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PREFACE

The analysis, identification, measurement and evaluation of the abilities of pupils that underlie and condition achievement in Science constitute the peak-point of the use of self-tests in modern, enlightened teaching practice. The self-tests in HELP YOURSELF TO SCIENCE are an important device in the teacher's diagnostic equipment, for they have been specially designed to test the mental ability of the pupil, not only from the viewpoint of content mastery, but have also taken into account other learning products which include such aspects as thinking skills and desirable attitudes.

Teachers will find that these informal objective tests inject a surprisingly large degree of accuracy into their methods of diagnosis, measurement and evaluation. Through the use of these adequately valid and reliable measuring devices, teachers will obtain precise, instructional information concerning the abilities and limitations of their pupils, of individual pupil differences in capacity and achievement and the status of achievement of the class as a whole.

The Workbooks will keep the pupil informed of his progress and this will inevitably serve as further incentive to greater effort. The tests will aid the pupil to check and marshal his grasp of the text and give him practice in the skills of collecting data, solving problems, applying his understanding to everyday situations and in this way, further reinforce his command of the subject.

These tests, chiefly because of their definiteness and objectivity, will also reveal to the teacher the extent of efficiency of certain special methods of instruction he has employed, while special types of emphasis he has used will be brought into sharp focus from a critical analysis and interpretation of the test-results. The results will also give the teacher evidence of the pupils' progress towards specific goals of achievement : their ability to express their knowledge, the extent of their understanding of the science vocabulary used in the text, their mastery of facts, their growth in scientific attitudes, interests and appreciations and their proficiency in using their freshly acquired skills to identify, attack and solve problems. Furthermore, the results will provide the teacher with a basis for the objective grade placement of pupils.

HELP YOURSELF TO SCIENCE is purposely designed to ensure maximum activity on the part of the pupil. The learning experiences in the series have been styled and organised to involve the pupil in the process of learning about science, for it is such involvement in a meaningful learning experience which is directed towards the accepted objectives of science teaching, that will further vitalise his study of the texts and serve to develop, clarify and enrich his science understandings. These thought-provoking study-helps are planned to raise the pupil out of the mire of conventional memorisation of factual material and the traditional tendency to cast all instruction into the mould of mere assimilation of subject matter; they aim at providing guidance to first-hand experiences which offer the pupil abundant opportunities to effectively translate into action his newly acquired knowledge in the world outside the class-room. Accordingly, specific directions are given for independent and group investigation and experimentation which focus on the major concepts and principles presented in the texts, so that, the pupil may experience the thrill of active participation as he explores his environment to collect the evidence he requires to facilitate his learning of the subject.

Properly exploited by the teacher the suggested experiences in each Workbook may well open new avenues of interest and satisfaction to the pupil besides amplifying and extending the corresponding text which it accompanies, thereby contributing to overall understanding and fulfilling the triple function for which it has been designed — to serve as a testing, a learning and a teaching aid.

Each Workbook contains tests which are constructed parallel to the chapters in the text-book it accompanies, so that the student's mastery of each chapter is facilitated. At the end of the book are tests which require the integration of the knowledge gained in the preceding chapters in order to be answered correctly.

The sheets in the Workbook may be distributed separately in schools where a loose-leaf file is in use for the subject, or the Workbook can be used intact. In either case, the corrected exercises should be readily available as a reference for study and review.

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FOR TEACHERS ONLY

Teachers who wish to have the answers to any of the Self-testing Exercises in this Workbook should address their enquiries to:

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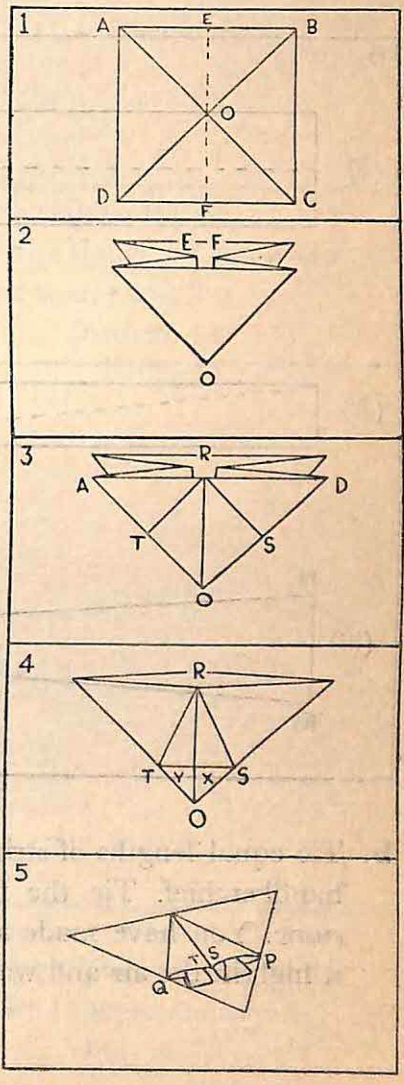
NAME____________________ CLASS__________ DATE__________

1

The Air around Us

1. You have read that air is all around us. Use the air around you to make things float in it.

a. Make a paper aeroplane. Carefully follow each step.



First step :

Take a square sheet of paper *ABCD*. Fold it along *AC* and open it; then along *BD* and open it. Again, fold it along *EF* and open it out.

Second step :

Gather *EO* and *FO* back to back so as to meet over *O*. Press downwards to obtain the triangle as shown.

Third step :

Fold along *RS* so that *D* meets *O*; fold along *RT* so that *A* meets *O*.

Fourth step :

Fold *RS* on to *RO* and *RT* on to *RO*.

Fifth step :

Tuck the portion marked *X* in No. 4 into the fold *SP*, and the portion marked *Y* in No. 4 into the fold *QT*.

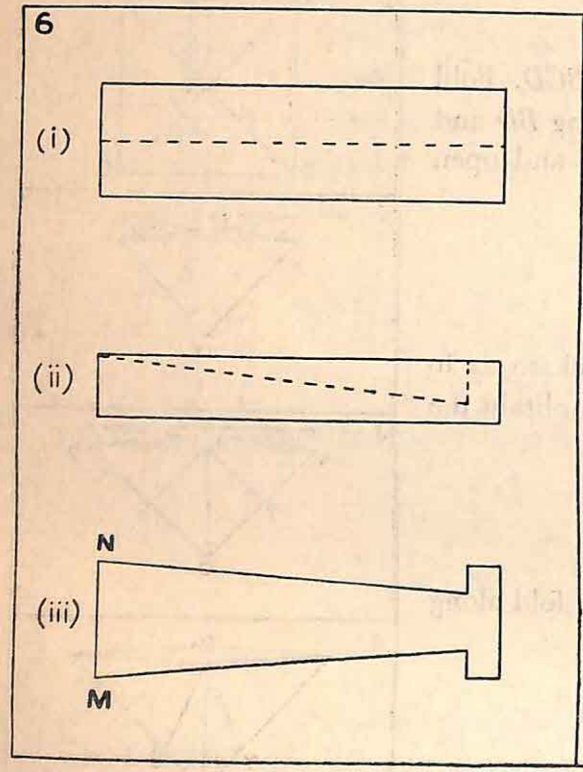
Sixth step :

Take a narrow strip of paper having its length equal to the side of the square sheet. Fold it along the dotted line. Next cut it along the dotted line shown in **No. 6(ii)** to make the shape shown in **No. 6(iii)**.

Seventh step :

Push the end *NM* of the strip into the triangle *OAD* so that the middle line of the triangle and the strip fall over one another. Fold along the dotted line. Fly it !

6



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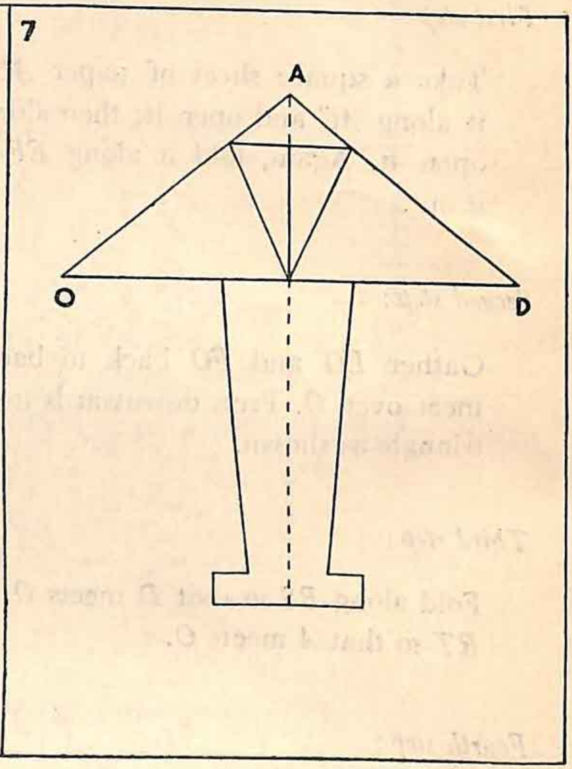
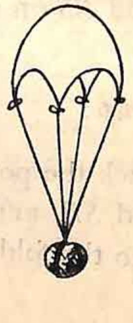


b. Tie equal lengths of string to the four corners of your handkerchief. Tie the free ends of the strings to a stone. You have made a parachute. Roll it up, throw it high in the air and watch it float down.



NAME____________________ CLASS__________ DATE__________

2. Do you like riddles? Try answering these. The clues below each box will tell you what you are to draw.

i. I live in the soil.
ii. I breathe the air in the soil.
iii. I am pink in colour.

Draw me !

i. I am a water-creature.
ii. I breathe the air in the water.
iii. I have scales and fins.

Draw me !

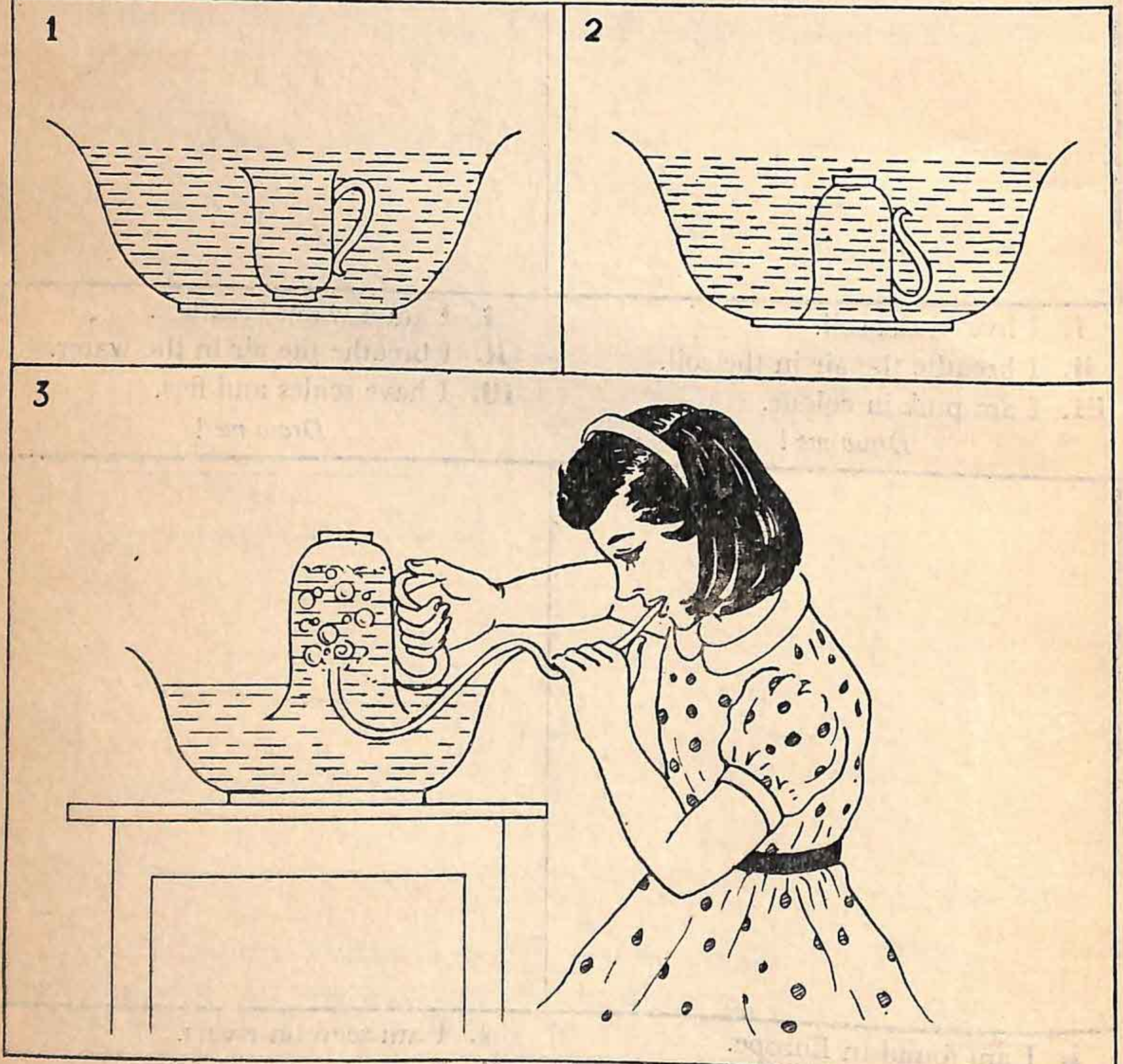
i. I am found in Europe.
ii. I have four sails.
iii. I grind corn.

Draw me !

i. I am seen on rivers.
ii. I carry people and cargo.
iii. The wind makes me move.

Draw me !

3. Obtain a large jar and a basin. Pour some water into the basin. Fill the jar with water as shown in *1* and *2* and invert it over the water in the basin as in *3*. Insert one end of a rubber tube into the jar. Take a deep breath and blow only once into the tube. The air you blow in will push out some of the water in the jar. Look at the amount of air in the jar. It is your greatest breath. Stick a piece of paper on the jar to mark the level of water in it. Fill the jar again with water and ask mummy to try. Compare her greatest breath with yours.

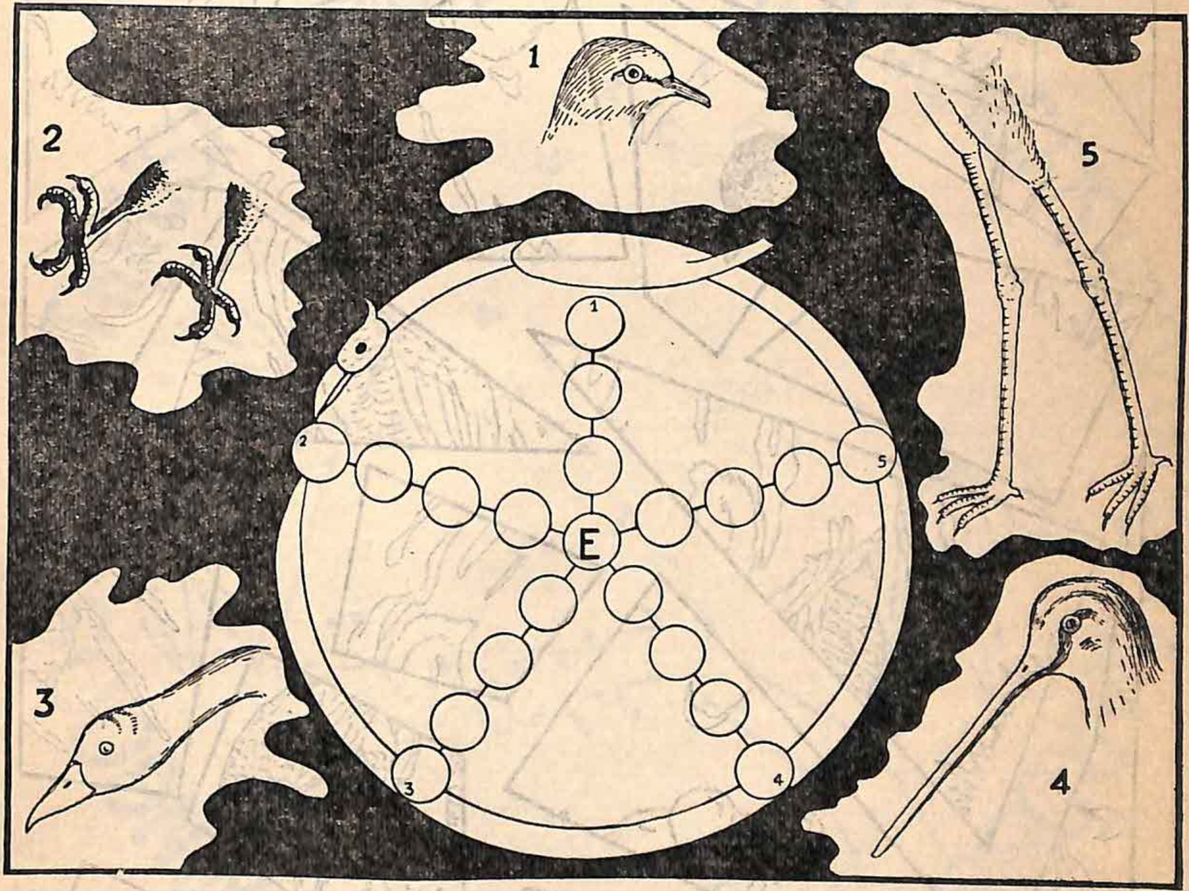


NAME____________________ CLASS__________ DATE__________

2

Our Feathered Friends

1. This is a star puzzle in which you are to fill in the names of five birds whose names end with the letter E. The birds themselves will give you the clues.



i. You will see from my beak that I am a seed-eater.

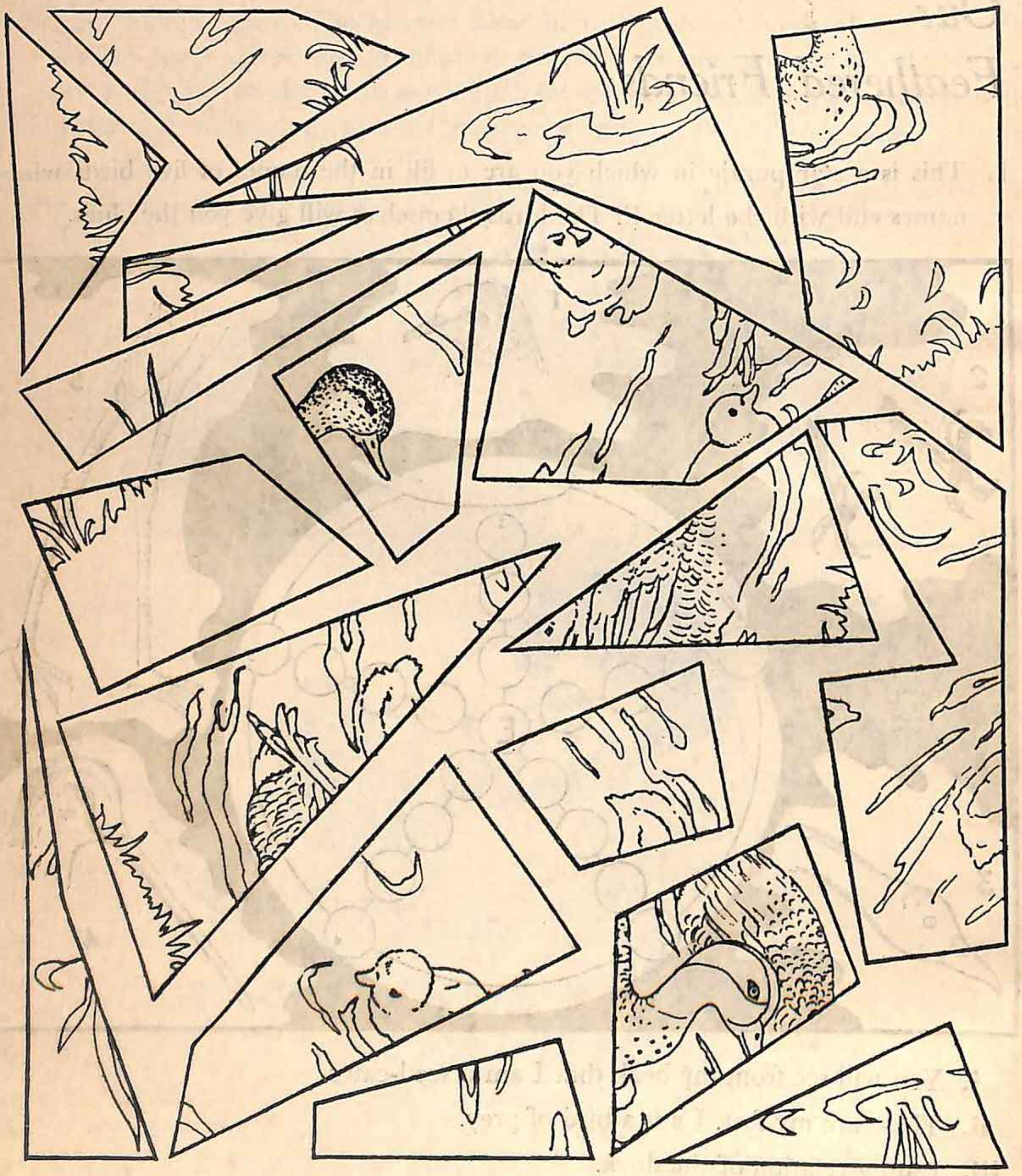
ii. These are my feet. I am a bird of prey.

iii. I am a relation of the duck.

iv. My beak is long and pointed. I use it to dig in the mud for worms.

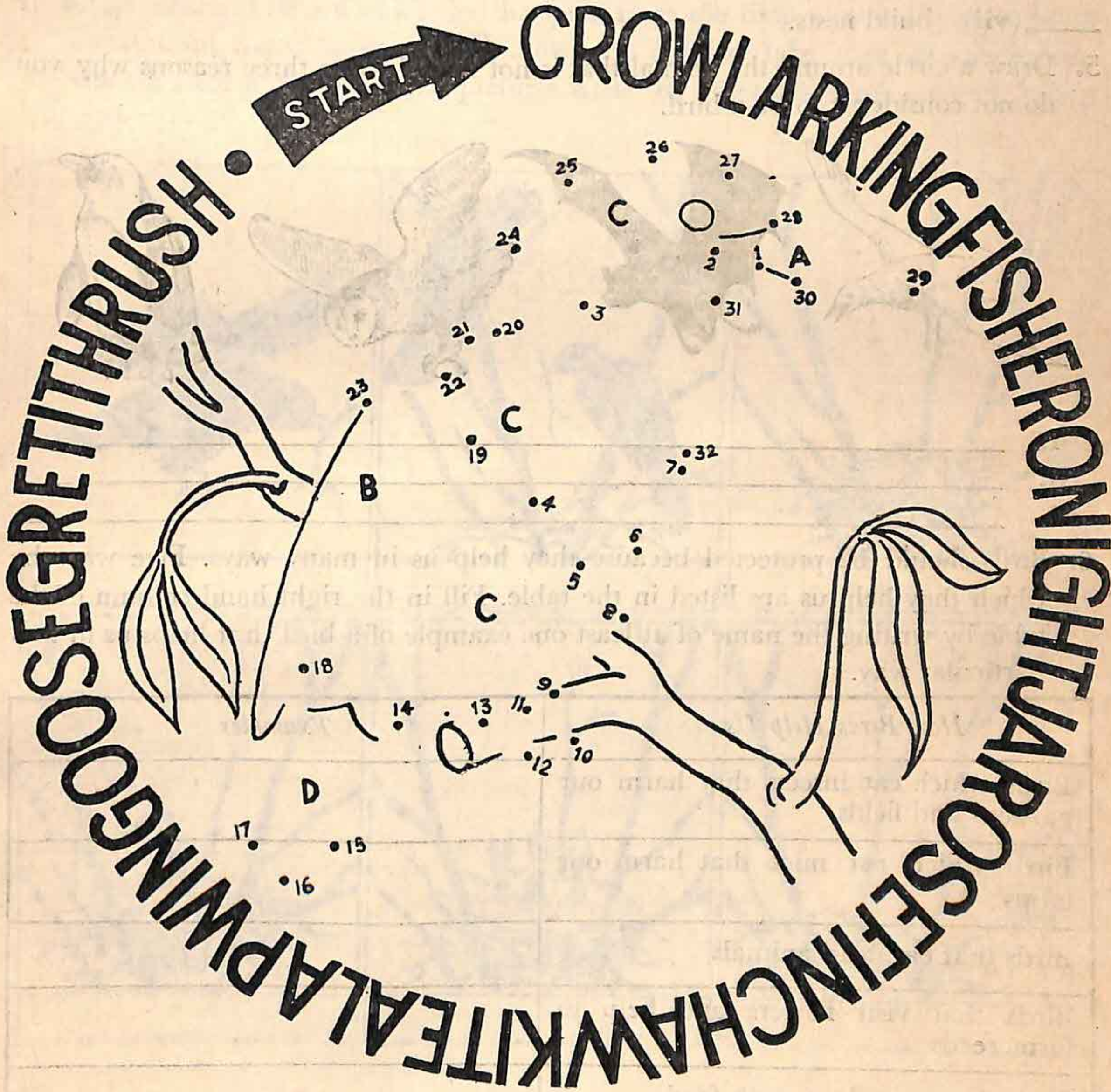
v. My long legs help me to wade in shallow water.

2. Paste a sheet of drawing paper on a cardboard. Trace these shapes on the drawing paper. Thereafter cut the shapes out to make yourself a jig-saw puzzle.



NAME ____________________ CLASS __________ DATE __________

3. Read the letters in the direction of the arrow and see how many of the fifteen birds' names you can spot. Write their names on the lines below. Next, join the dots and from your list, select the name of the bird you have drawn and underline it. Make the completed picture beautiful with your crayons by colouring as follows : A—red, B—blue, C—brown, D—grey.

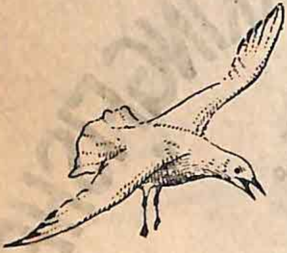
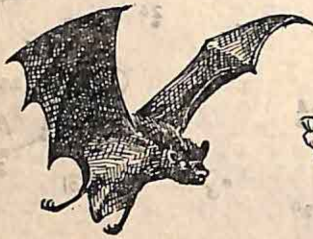
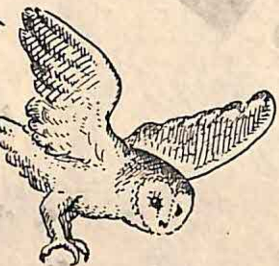
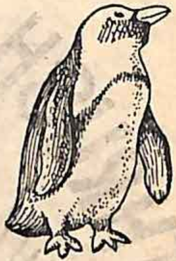


4. Mark **T** against one or more of the phrases listed below if they correctly complete the statement which begins as follows:

All birds

______**(i)** have feathers.
______**(ii)** fly.
______**(iii)** have wings.
______**(iv)** lay eggs.
______**(v)** have beaks.
______**(vi)** have two legs.
______**(vii)** build nests.

5. Draw a circle around the animal that is not a bird. Give three reasons why you do not consider it to be a bird.

i. ______________________________
ii. ______________________________
iii. ______________________________

6. Birds should be protected because they help us in many ways. Five ways by which they help us are listed in the table. Fill in the right hand column of the table by writing the name of at least one example of a bird that helps us in that particular way.

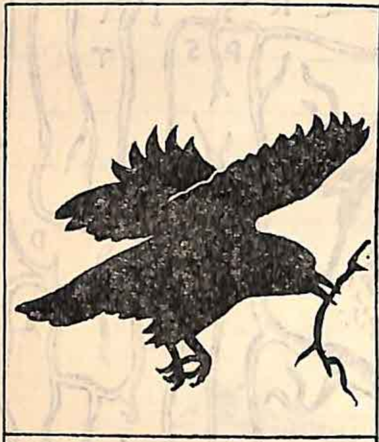
How Birds Help Us	*Examples*
Birds which eat insects that harm our gardens and fields	
Birds which eat mice that harm our crops	
Birds that eat dead animals	
Birds that visit flowers and help to form seeds	
Birds that provide us with food	

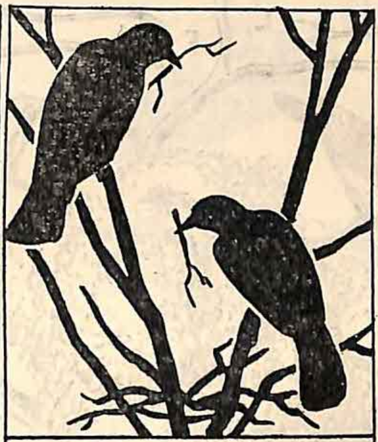
NAME ______________________ CLASS ____________ DATE ____________

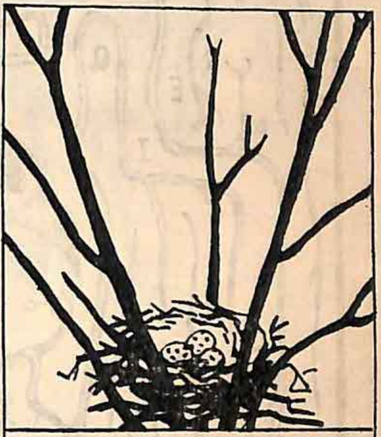
3

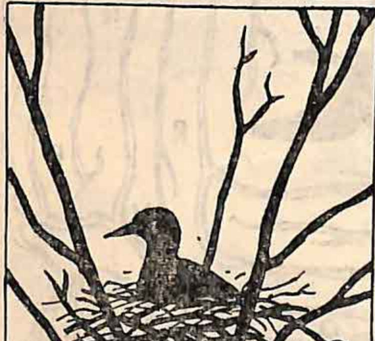
Homes for Baby Birds

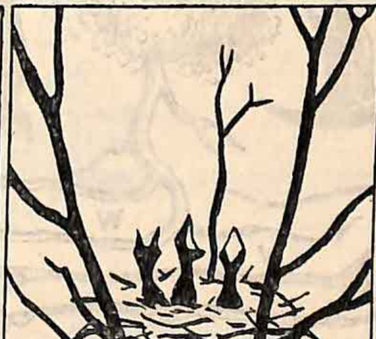
1. Keep a careful record of all that happens from the time a crow begins to build a nest until the time the young crows are able to take care of themselves. Beneath each of the following pictures write the dates when you see such things happen.

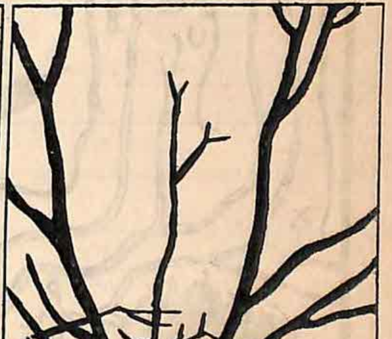




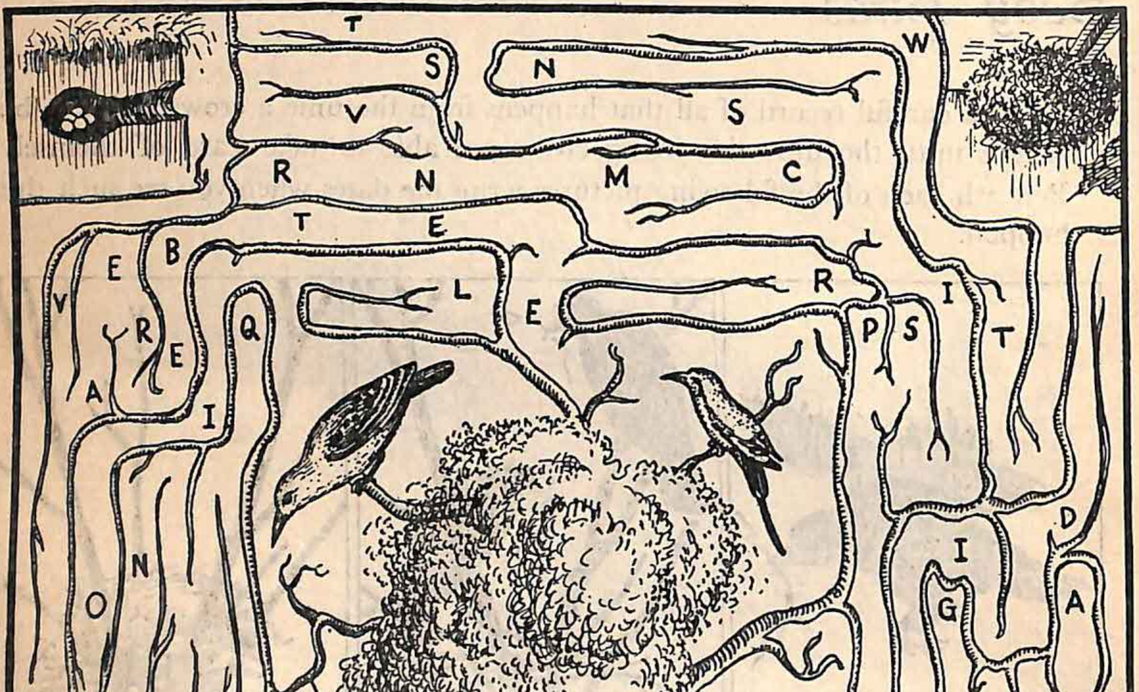








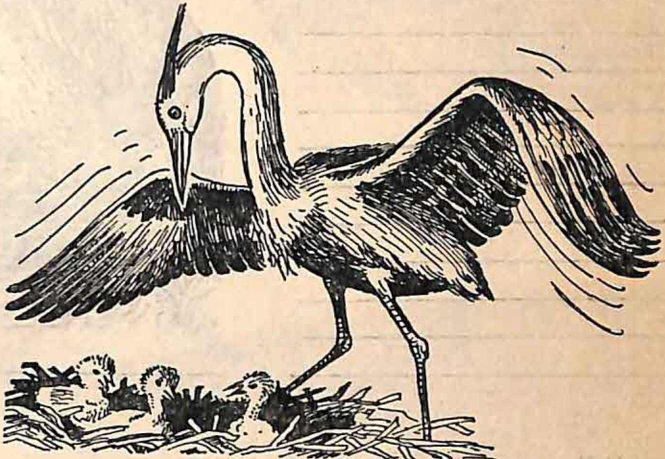
2. Follow the pathway taken in the maze by each bird as it flies to its nest. The letters lying along the shortest route will give you a jumbled spelling of its name. Unscramble the letters to obtain the name of the bird. Write its name near its nest.

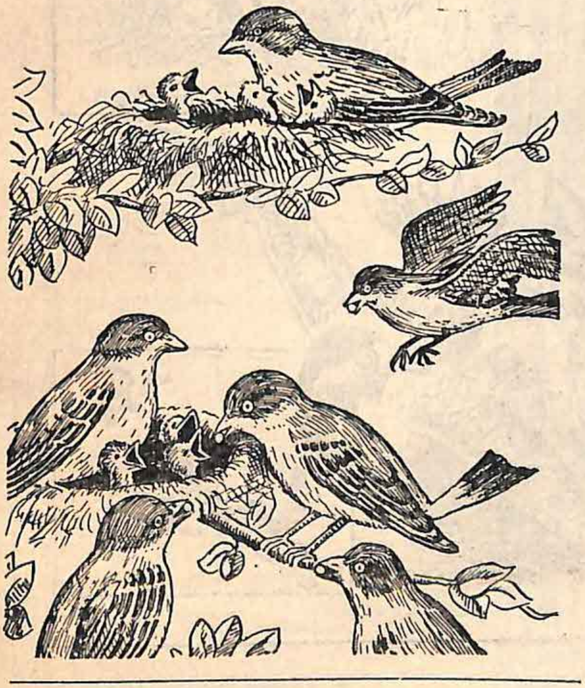


NAME________________ CLASS__________ DATE__________

3. These pictures show how different birds protect their young ones. Give each picture a caption. Then write the story of the picture on the lines beside each picture. Use any of the words given in brackets if they help you.

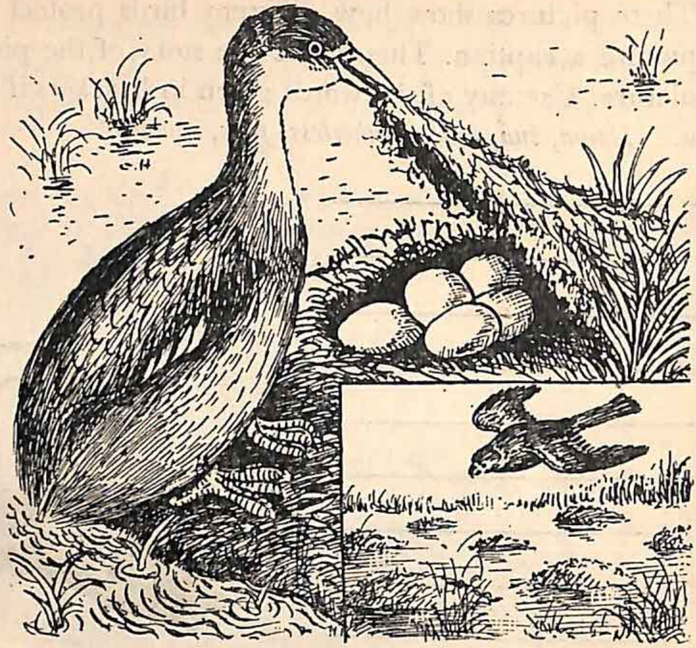
a. (*Heron*, *sun*, *heat*, *featherless*, *fans*, *summer*)



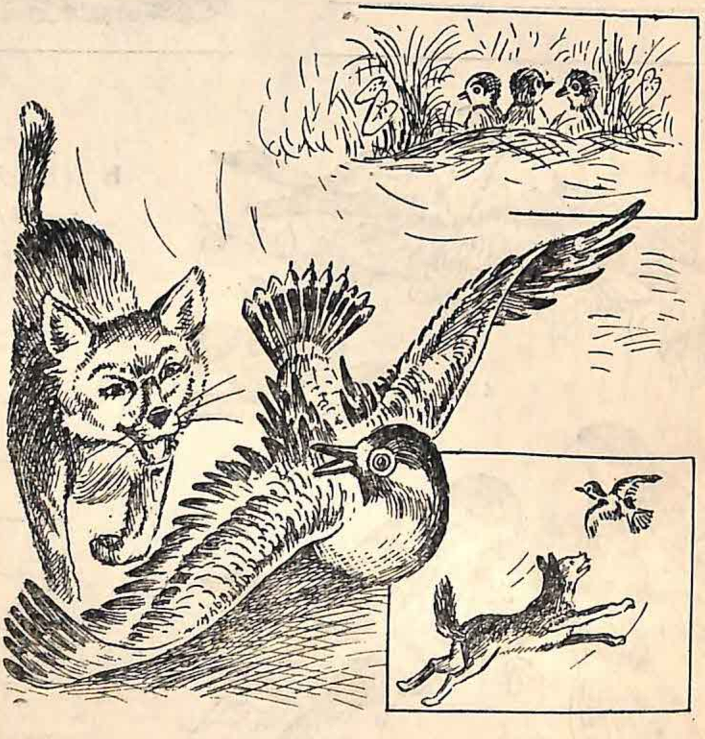


b. (*Black-headed Bunting*, *widow*, *neighbours*, *help*, *adopt*, *feed*)

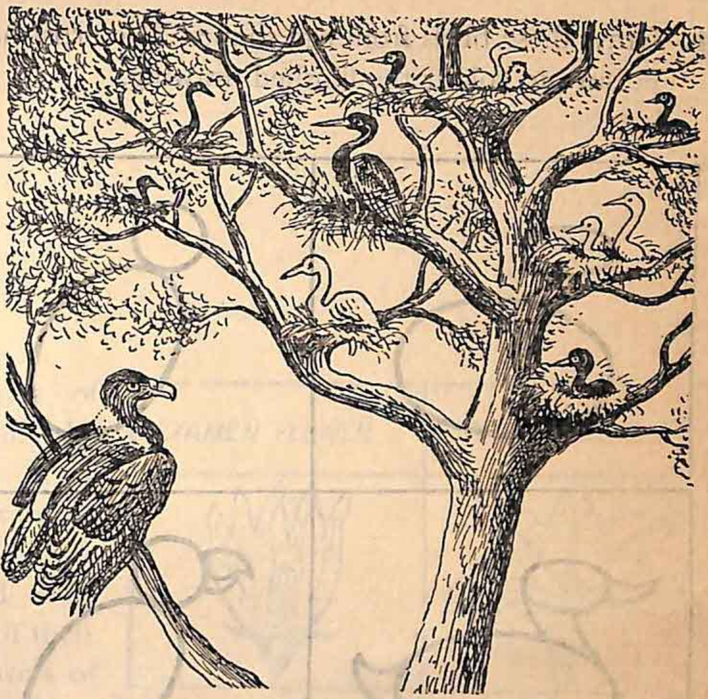
c. (*Little Grebe, floating nest, danger, blanket, rubbish, Hawk, puzzled, difficult, spy*)



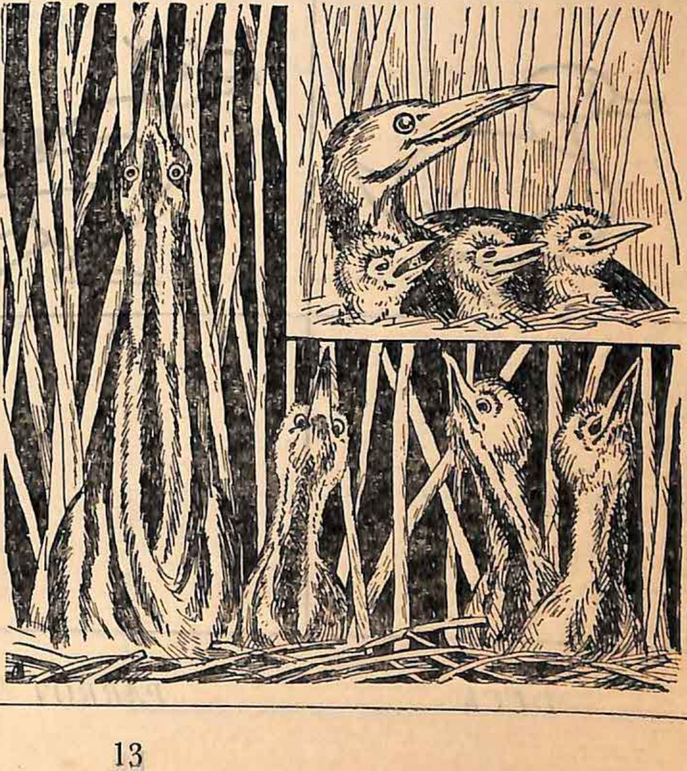
d. (*Yellow-wattled Lapwing, Fox, danger, threatens, pretends, broken, wing, deception, saves*)



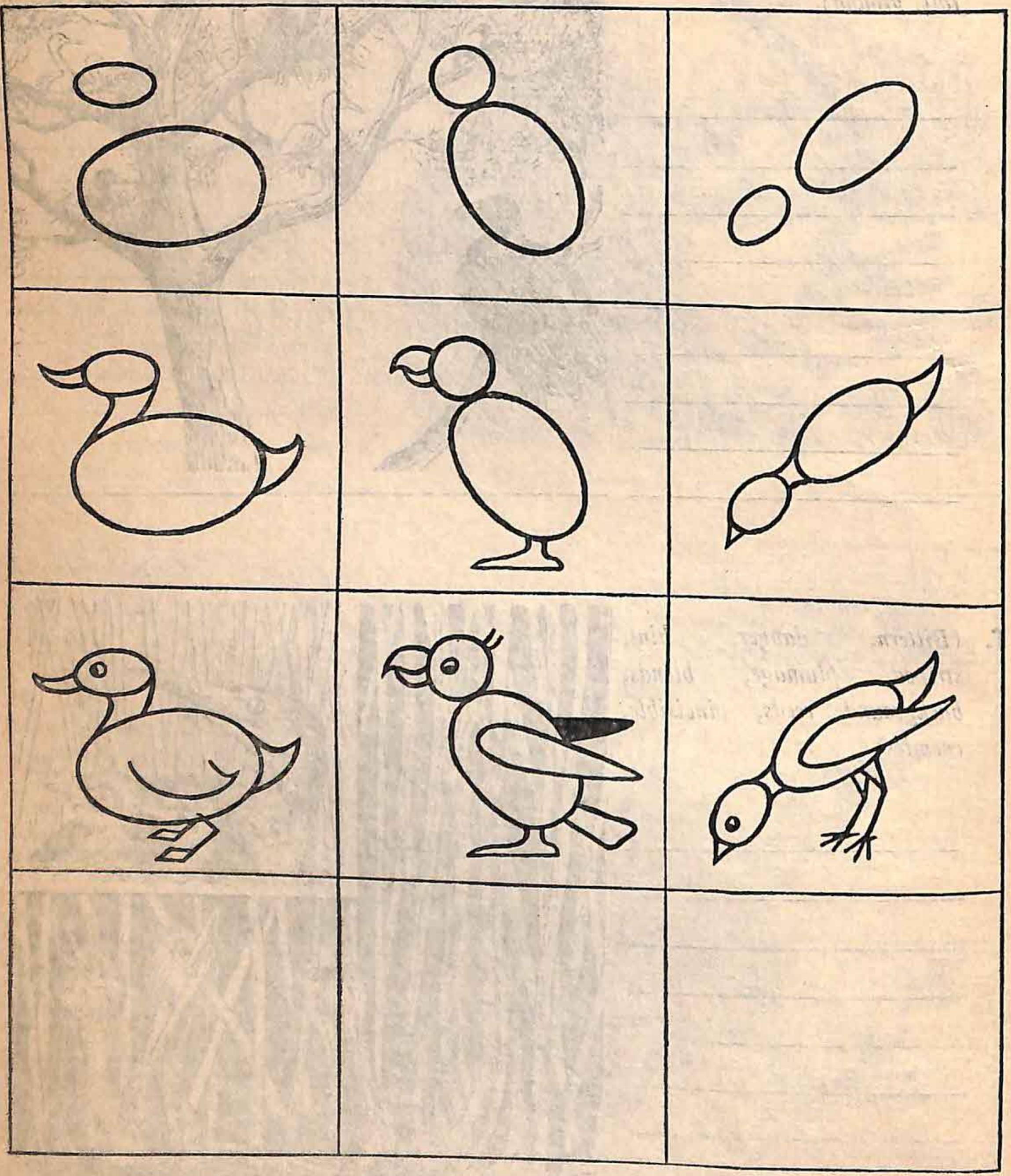
e. (*Pond birds, colonies, unity, strength, Vulture, waits, hoping, babies, accidents, fall, ground*)



f. (*Bittern, danger, hint, striped plumage, blends, background, reeds, invisible, enemies*)



4. Draw these birds from egg shapes. The artist has shown you the steps to follow. Be sure to colour the finished drawing.



DUCK *PARROT* *MYNA*

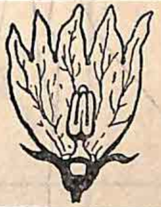
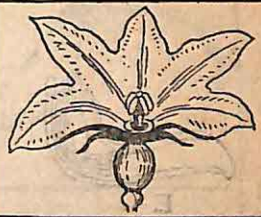
NAME____________________ CLASS__________ DATE__________

4

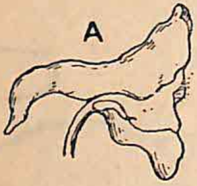
Contents of a Flower Bud

1. Some plants have two kinds of flowers. In one kind there is only the pistil to be found, while the other has stamens but no pistil. Look in the vegetable and flower gardens for the plants given in this list and draw sectional pictures of any four of their flowers in the boxes. The flowers of the Gourd have been drawn to show you what you must do.

Castor Oil. Croton. Grass. Jatropha. Maize. Mulberry. Palm. Papaya.

STAMEN FLOWER	*PISTIL FLOWER*
	

2. Link the inner parts of a flower with its outer parts by writing the letters in pairs on the line below. Colour each flower and write its name on the line near its picture.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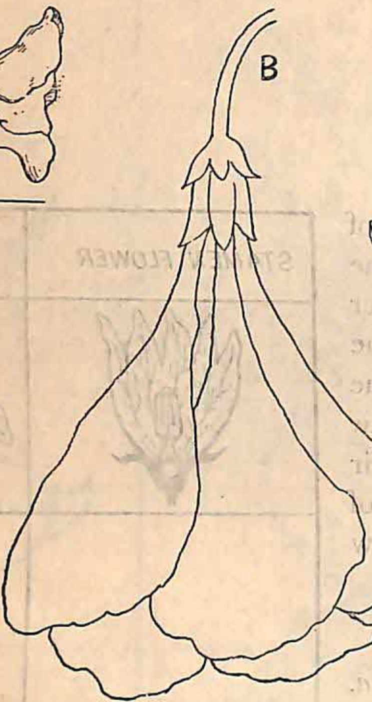
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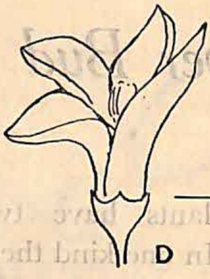
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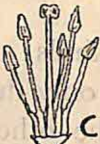
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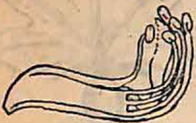
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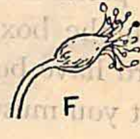
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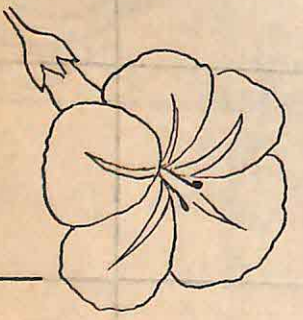
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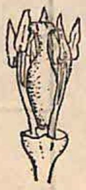
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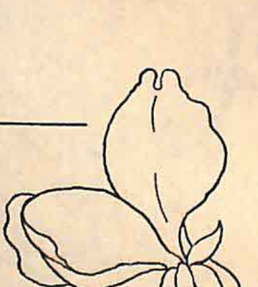
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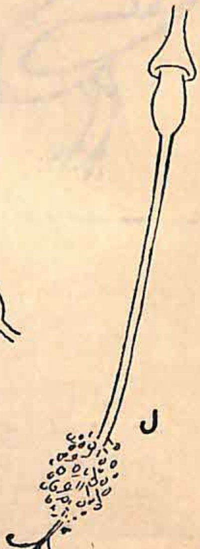
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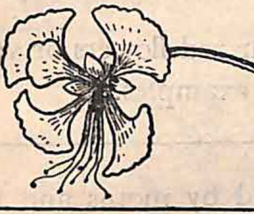
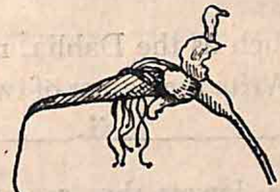
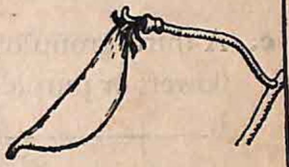
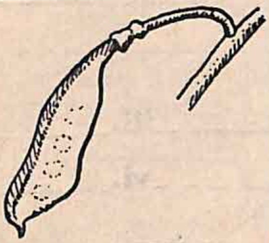
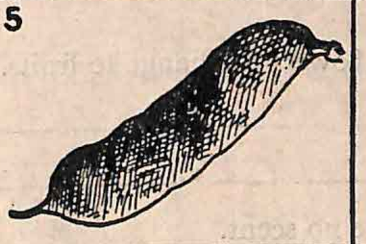
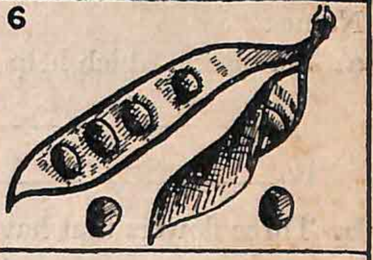
NAME________________________ CLASS______________ DATE______________

5

Pollen Carriers

1. This picture story shows how the Peacock flower slowly changes to a fruit. Make your own picture story about your favourite flower in the empty boxes below each picture. Write the date of each new change.

1 	**2** 	**3** 
4 	**5** 	**6** 

2. **a.** Certain plants always bear flowers of one particular colour. Can you name a plant that always bears:

i. Red flowers? ____________

ii. Blue flowers? ____________

iii. Green flowers? ____________

iv. Yellow flowers? ____________

v. Purple flowers? ____________

b. Other plants bear flowers that are a mixture of two or more colours. Can you name three examples?

i. ____________ **ii.** ____________ **iii.** ____________

c. A third group of plants, such as the Dahlia, may bear red flowers or yellow flowers or purple flowers. Write the names of two other examples.

i. ____________ **ii.** ____________

3. State two differences between flowers that are pollinated by moths and those pollinated by butterflies.

i. ____________

____

ii. ____________

____

4. Name:

a. Six insects which help flowers to change to fruits.

i. ____________ **ii.** ____________ **iii.** ____________

iv. ____________ **v.** ____________ **vi.** ____________

b. Three flowers that have no scent.

i. ____________ **ii.** ____________ **iii.** ____________

c. Two flowers that have scent.

i. ____________ **ii.** ____________

d. Three night bloomers.

i. ____________ **ii.** ____________ **iii.** ____________

e. One bird that feeds on nectar.

____

NAME____________________ CLASS__________ DATE__________

5. During the time between the splitting of the anthers—which takes place when the pollen is ripe—and the departure of the pollen for the stigma of another flower, it is very important that the pollen is not wetted, for if this happens, it will be spoilt. Many plants have some means to protect their pollen from the rain or dew.

Look for these examples of plants that try to protect their pollen. When you find them, colour the drawings accordingly.

During your visits to the garden, you are sure to see other examples of plants that protect their pollen. Write the names of two such plants below the illustrated example to which, in its way of protecting its pollen, it corresponds.

WAYS BY WHICH SOME PLANTS PROTECT THEIR POLLEN FROM BECOMING WET

a. By closing their petals right round the stamens.

SNAPDRAGON

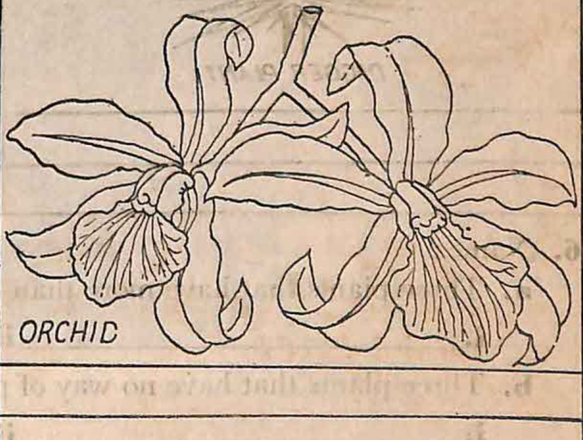
b. By having their stamens placed in narrow tubes.

PERIWINKLE

c. By closing their flowers when the sky grows dark.

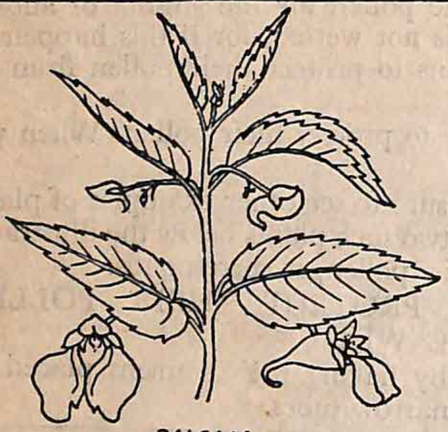
FOUR O'CLOCK PLANT

d. By having some part of the flower to form a hood over the stamens.



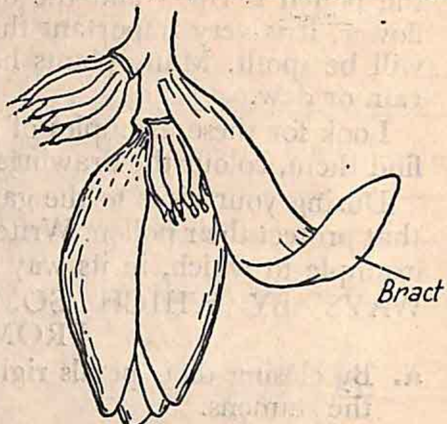
ORCHID

e. By arranging their flowers under their leaves.



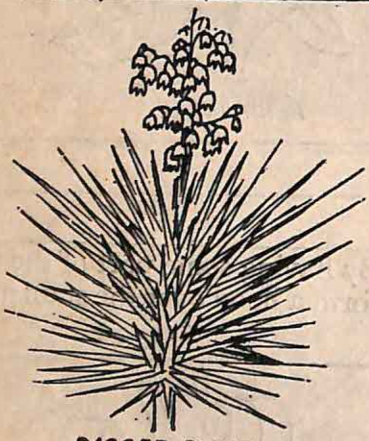
BALSAM

f. By having a special leaf, called a bract, serve as an umbrella over the stamens.



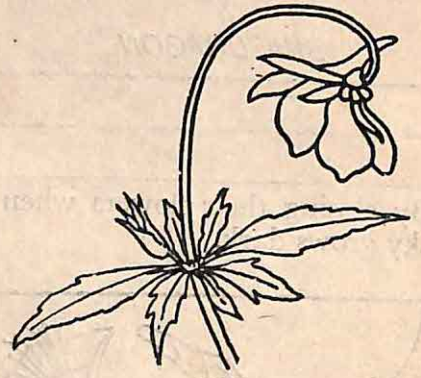
BANANA

g. By making the flowers hang downwards.



DAGGER PLANT

h. By curving their flower-stalk at night so that the flowers face downwards.



PANSY

6. Name:

a. Three plants that have more than one way of protecting their pollen.

i.__________ **ii.**__________ **iii.**__________

b. Three plants that have no way of protecting their pollen.

i.__________ **ii.**__________ **iii.**__________

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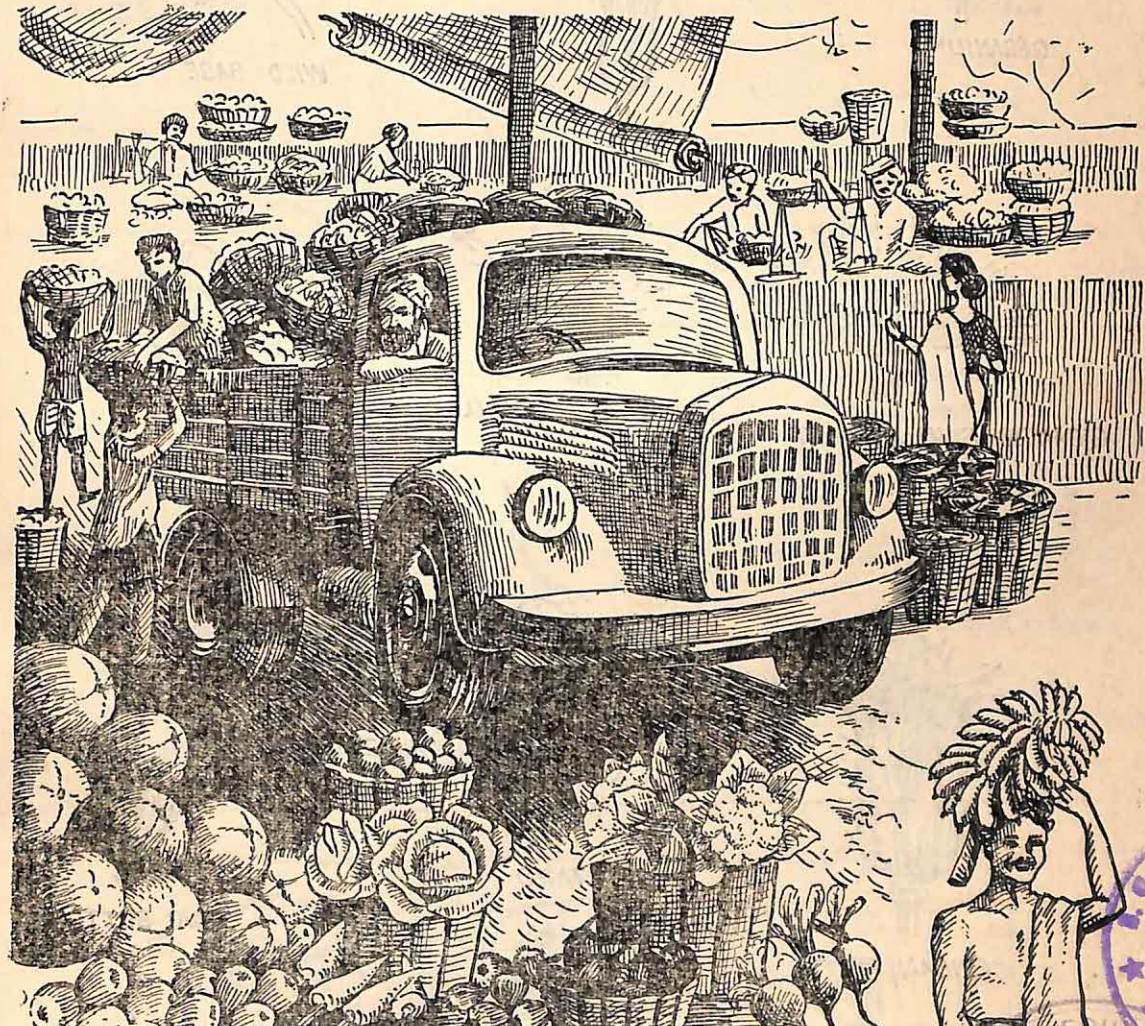
6

Journey of a Seed

1. How many different kinds of fruit can you see in the foreground of this picture? Number them and name them on the line below.



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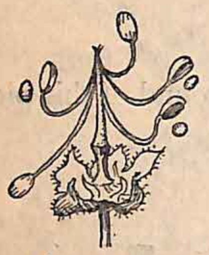
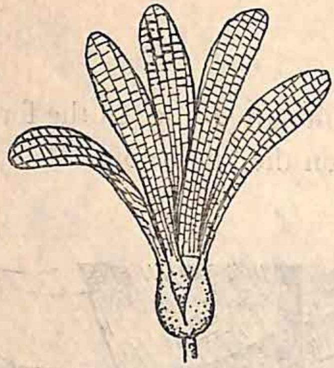
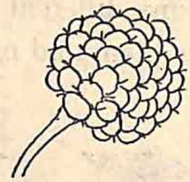
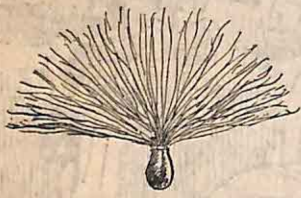
Date 12.9.05
Acc. No 11921

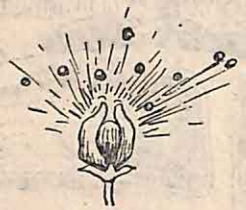
2. Pair off the following according to their method of seed dispersal. Write the names of each pair on the lines below. Below each fruit is written its name. How many of these different kinds of fruit have you collected for your museum?

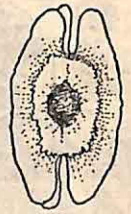

GERANIUM

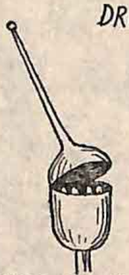

SAL

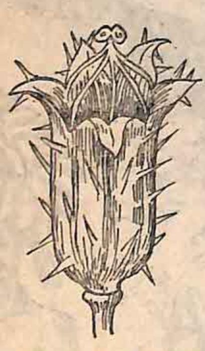

WILD SAGE

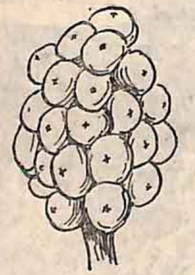

GIGANTIC SWALLOWWORT

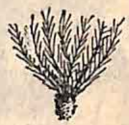

YELLOW WOOD SORREL


DRUMSTICK TREE


WHITE COCK'S-COMB

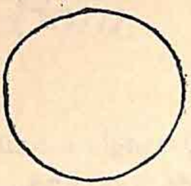

MEXICAN POPPY


TARO


COAT BUTTONS

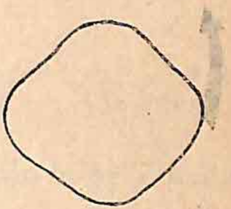
NAME____________________ CLASS__________ DATE__________

3. a. The outlines of ten fruits as they appear when cut cross-ways are drawn here. Obtain as many of these fruits as you can. Cut each cross-ways and see how the seeds are arranged. Then fill in its outline with drawings of the seeds to show their arrangement in the fruit.



1. CUCUMBER

2. PEA

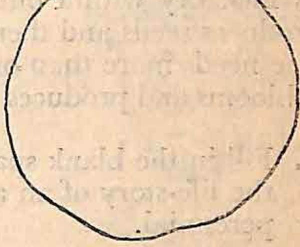


3. TOMATO

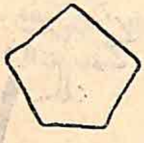
4. ORANGE

5. CAPSICUM

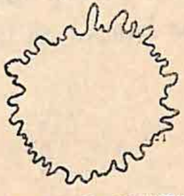
6. BEAN



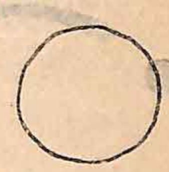
7. PAPAYA



8. LADY'S FINGER

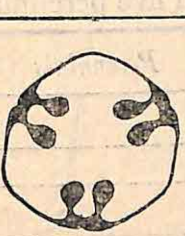
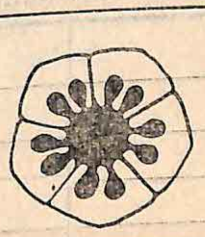
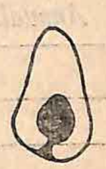


9. BITTER GOURD

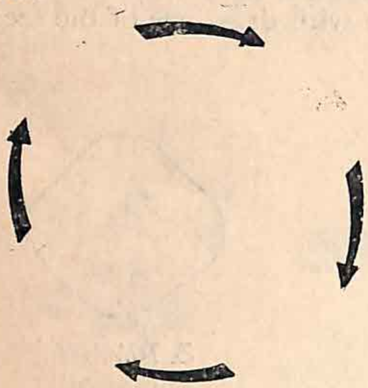


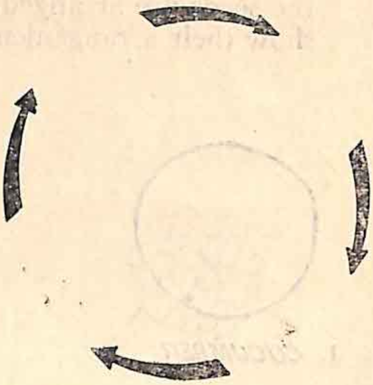
10. SNAKE GOURD

b. Three chief kinds of seed arrangement are pictured below. Match your drawings with these pictures by writing the number of each drawing below the picture to which it corresponds.

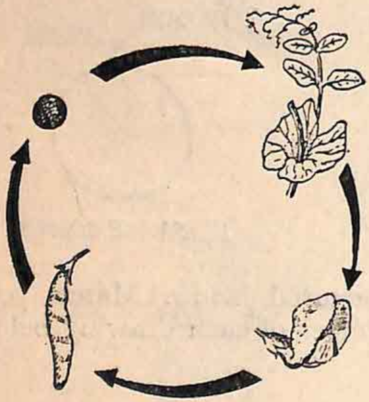
4. The pictures at the left tell the life-story of a Sweet pea plant. The story starts and ends with a seed. The pictures at the right tell the life-story of an Umbrella tree.

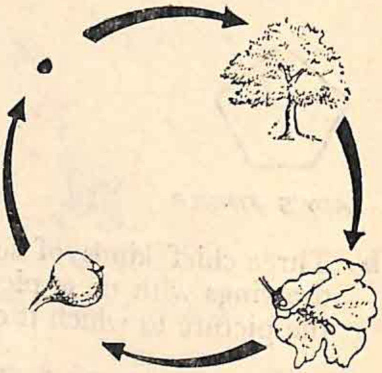




There is one important difference between the life-story of a Sweet pea plant and that of an Umbrella tree. The Sweet pea plant begins and completes its life-story within one year. Such a plant which grows from a seed, blooms, produces seeds and then dies within one year is called an annual. The Umbrella tree needs more than one year to grow up and bloom. Once it begins to bloom, it blooms and produces seeds year after year. We call such a plant a perennial.

a. Fill in the blank spaces between the arrows on the left with pictures to show the life-story of an annual, and those on the right to show the life-story of a perennial.





b. Fill in the table with the names of five annuals and five perennials.

Annuals	*Perennials*

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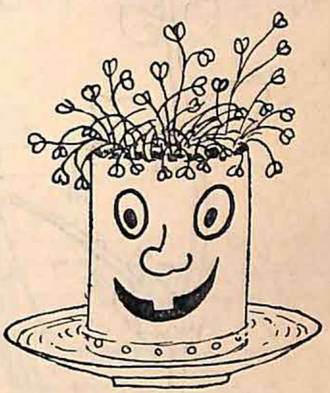
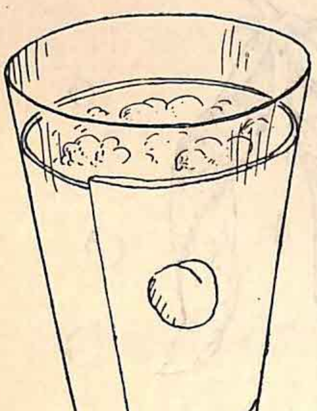
7

How Plants are Born

1. Obtain a cigarette tin and punch holes in the bottom of the tin using a nail and a hammer for this purpose. Paste a sheet of white paper around the tin. Draw a face with crayons on one side. Fill the tin with cotton wool. You can grow 'hair' on your man's head by sprinkling mustard seeds on the cotton wool and standing the tin in a dish of water. Within a day or two the 'hair' will sprout.

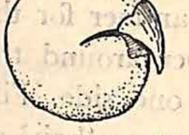


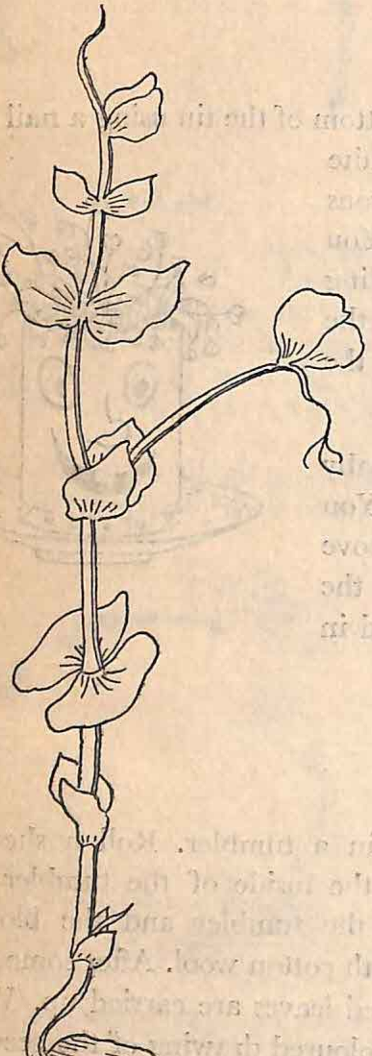
2. During the monsoon you will see a number of baby tamarind plants growing beneath their parent. You will notice that the seed leaves are taken up above the surface of the soil. Grow baby plants from the Tamarind seed or Castor oil seed or Gourd seed in a tumbler garden.

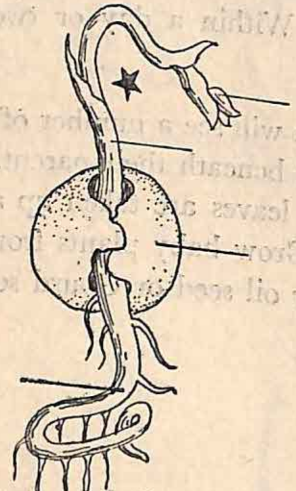


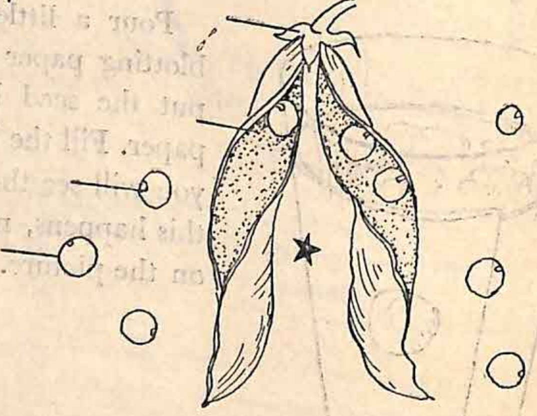
Pour a little water in a tumbler. Roll a sheet of blotting paper against the inside of the tumbler and put the seed between the tumbler and the blotting paper. Fill the inside with cotton wool. After some days you will see that the seed leaves are carried up. When this happens, make a coloured drawing of the seedling on the picture.

3. These pictures tell a story about the birth of a pea plant; but the story is mixed up because the pictures are mixed up. Rearrange them in the right order by numbering them. Label the pictures marked with stars by writing the name of each part to which a guide line points.







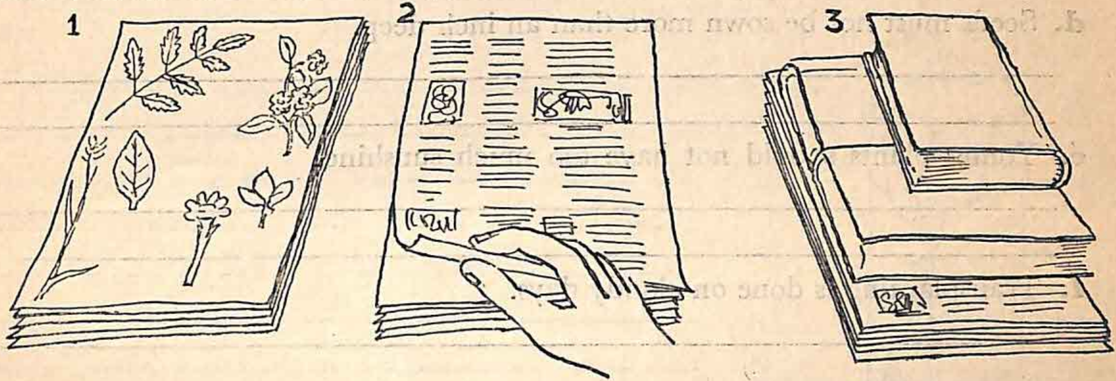


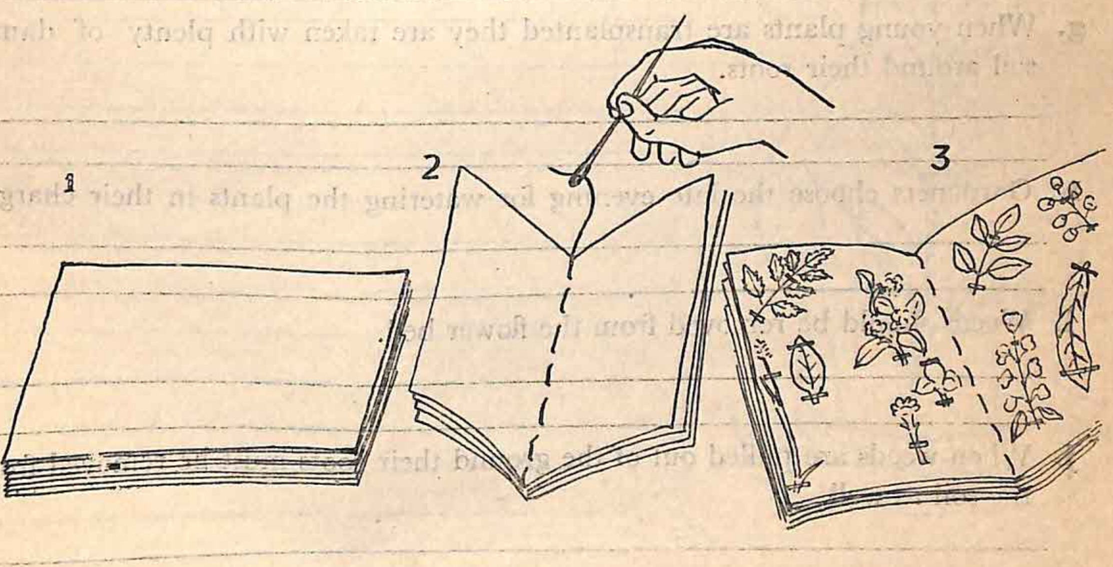
NAME________________________________CLASS______________DATE______________

8

Caring for Your Garden

1. Garden flowers are so beautiful that we would like to preserve them for ever. Here, in pictures, are shown what you must do to preserve your favourites. Place the cut flowers on newspaper and put heavy books over them. Inspect them every day to see if they have dried. Fasten them to the pages of a scrap-book by means of scotch tape.





2. Find out a reason for each of the following and write it on the blank lines below.

a. Manure is usually mixed with garden soil.

b. The gardener keeps his soil loose.

c. A little space is left between seeds when they are sown.

d. Seeds must not be sown more than an inch deep.

e. Young plants should not have too much sunshine.

f. Transplanting is done on cloudy days.

g. When young plants are transplanted they are taken with plenty of damp soil around their roots.

h. Gardeners choose the late evening for watering the plants in their charge.

i. Weeds should be removed from the flower bed.

j. When weeds are pulled out of the ground their roots must be removed from the soil as well.

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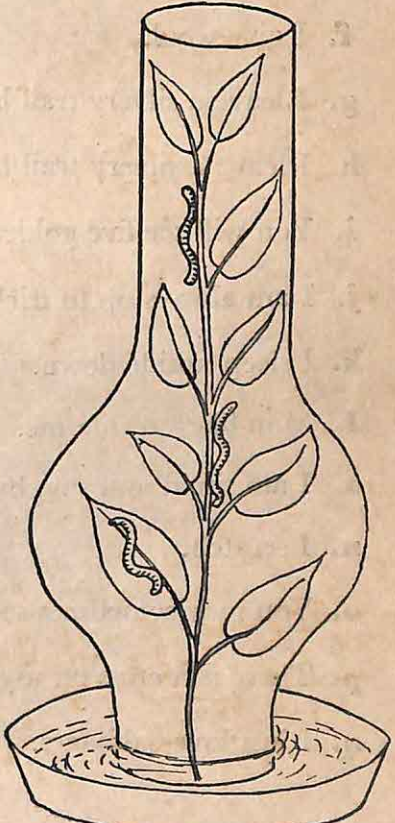
9

The Gardener's Foes

1. When you see an insect, or the baby of an insect, damaging a garden plant it will be a fine opportunity for you to rear it in an insect cage, and examine it. Carefully break the twig with the insects on them. Stand it in a bowl of water with the help of a lamp chimney. If you wish to study these insects for many days you must feed them on twigs obtained from the same kind of plant. Write your observations of the insects you studied on the lines below.



2. There is something in the garden eating the gardener's cabbages. To find out what it is you must join the dots in the order as given by the clues. Read a clue, then search for its answer in the second list entitled 'The Gardener's Foes'. The number of the answer gives you the number of the dot. Colour the picture after you have joined all the dots.

Clues

a. I am the baby of a butterfly.

b. My milk is in great demand.

c. Black is the colour of my kind.

d. My tail is curled.

e. I have a beard.

f. I give wool.

g. I leave a silvery trail behind me, but I have no shell.

h. I leave a silvery trail behind me and I have a shell for a house.

i. You will see five golden stripes on my back.

j. I am always up to tricks.

k. I sleep upside down.

l. Man likes to ride me.

m. I am timid and shy, but not at night.

n. I scratch.

o. You may sometimes see me in the garden eating Sunflower seeds.

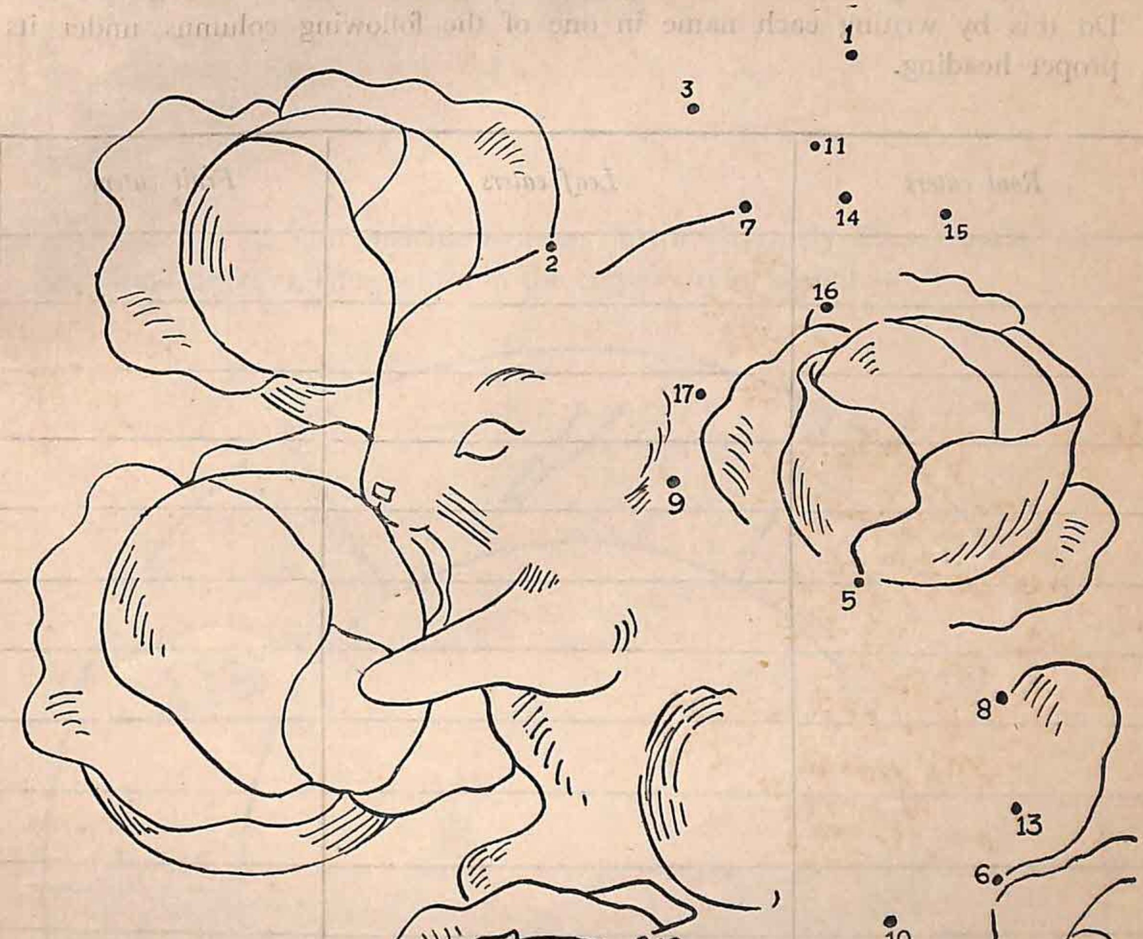
p. There is a cross on my back.

q. I just love cabbages.

The Gardener's Foes

1. Buffalo. 2. Caterpillar. 3. Cow. 4. Donkey. 5. Flying-fox. 6. Fowl. 7. Goat. 8. Horse. 9. Monkey. 10. Parrot. 11. Pig. 12. Rabbit. 13. Rat. 14. Sheep. 15. Slug. 16. Snail. 17. Squirrel.

NAME____________________ CLASS__________ DATE__________



3. Rearrange the gardener's foes as given on page 30 in the following columns. Do this by writing each name in one of the following columns under its proper heading.

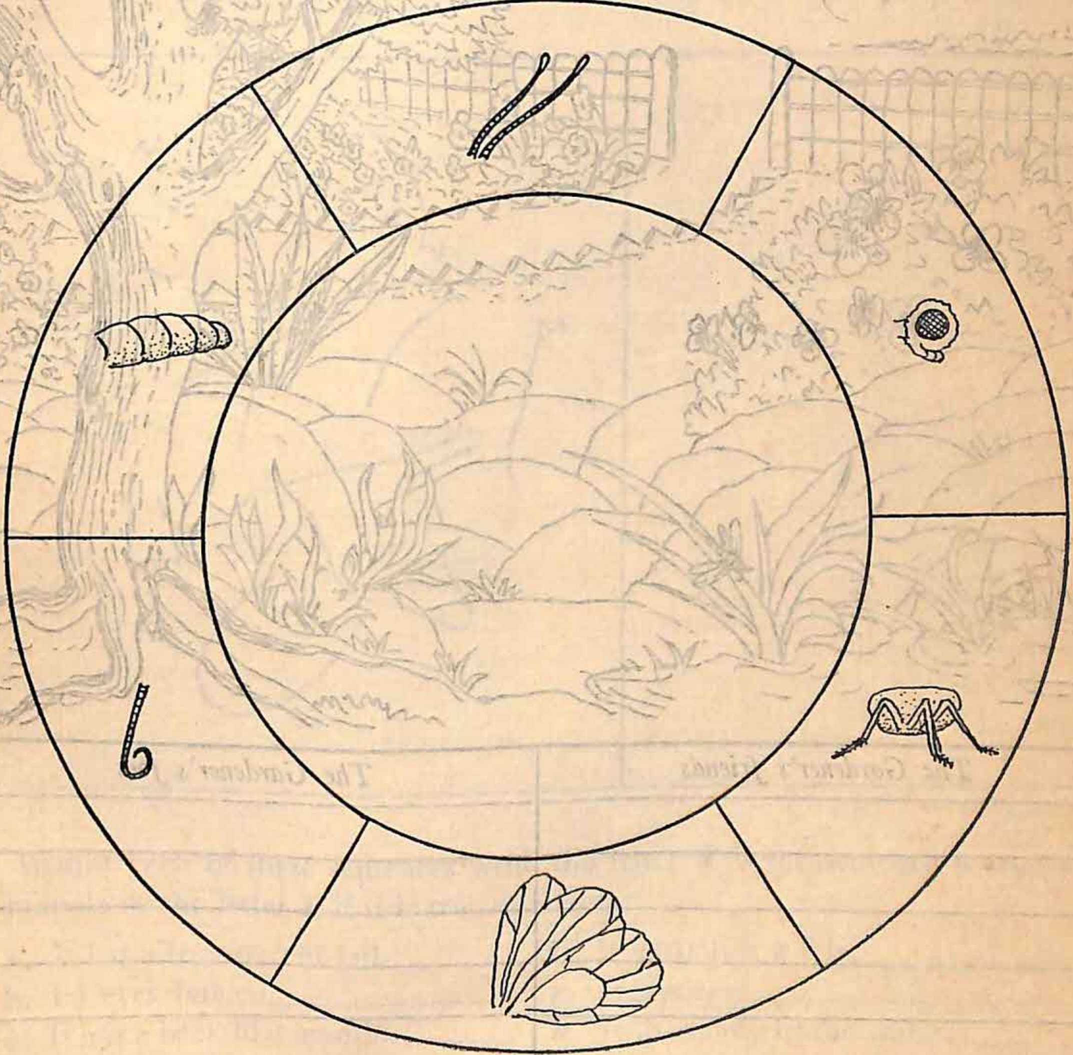
Root eaters	*Leaf eaters*	*Fruit eaters*

NAME____________________ CLASS__________ DATE__________

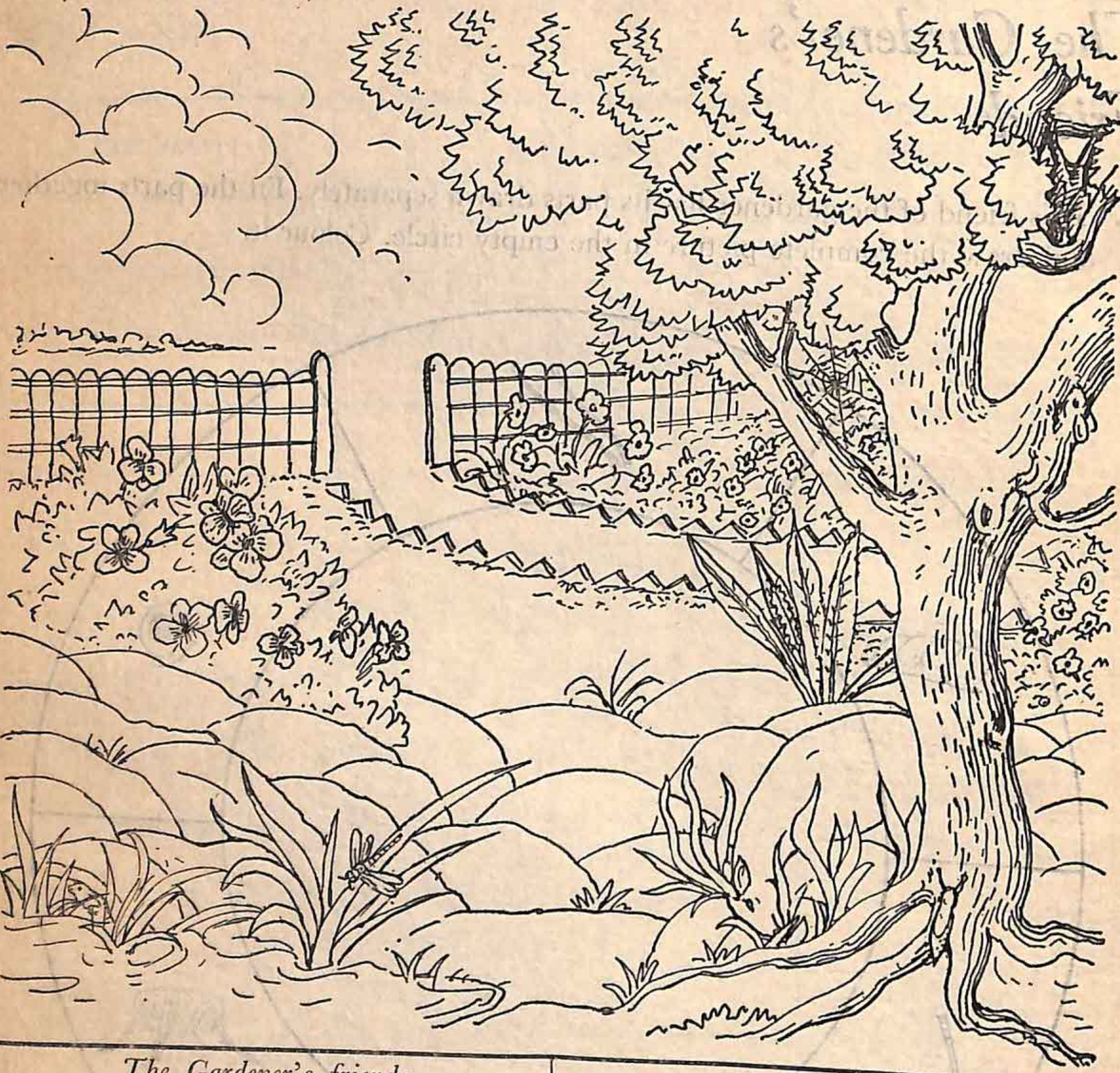
10

The Gardener's Friends

1. This friend of the gardener has its parts drawn separately. Fit the parts together and draw the complete picture in the empty circle. Colour it.



2. Hidden in this picture are ten friends and foes of the gardener. How many can you find? Write their names in the proper column.



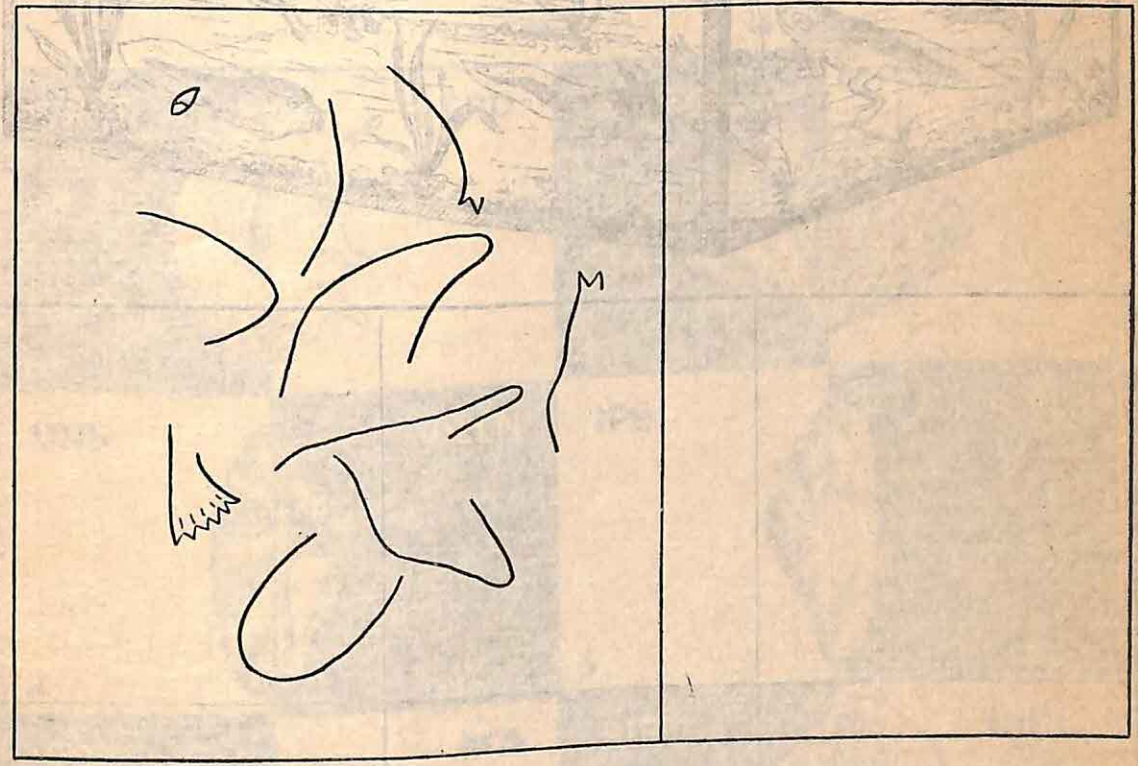
The Gardener's friends	*The Gardener's foes*

NAME____________________ CLASS__________ DATE__________

11

From Egg to Frog

1. Copy each of these lines on separate pieces of tracing paper. Put them together to form a picture of Mr. Frog. Then draw the picture in the empty box.



2. Against each of these sentences write the letter **T** if the sentence is true of a tadpole or the letter **F** if it is true of a frog.

a. It has a transparent tail.__________

b. Its eyes bulge.__________

c. It has a beak-like mouth.__________

d. It breathes by gills.__________

e. It croaks.__________

f. It looks like a fish.__________

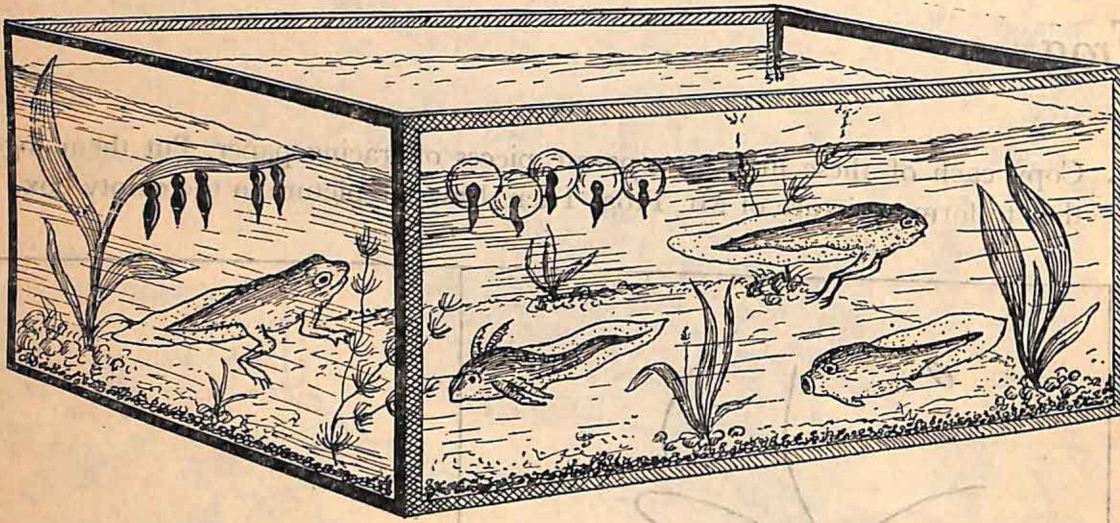
g. It lays eggs.__________

h. It lives only in the water.__________

i. It eats insects.__________

j. It can hop.__________

3. In this aquarium we can see a number of tadpoles in different stages of their development. Copy them in the correct order of development into the boxes below.

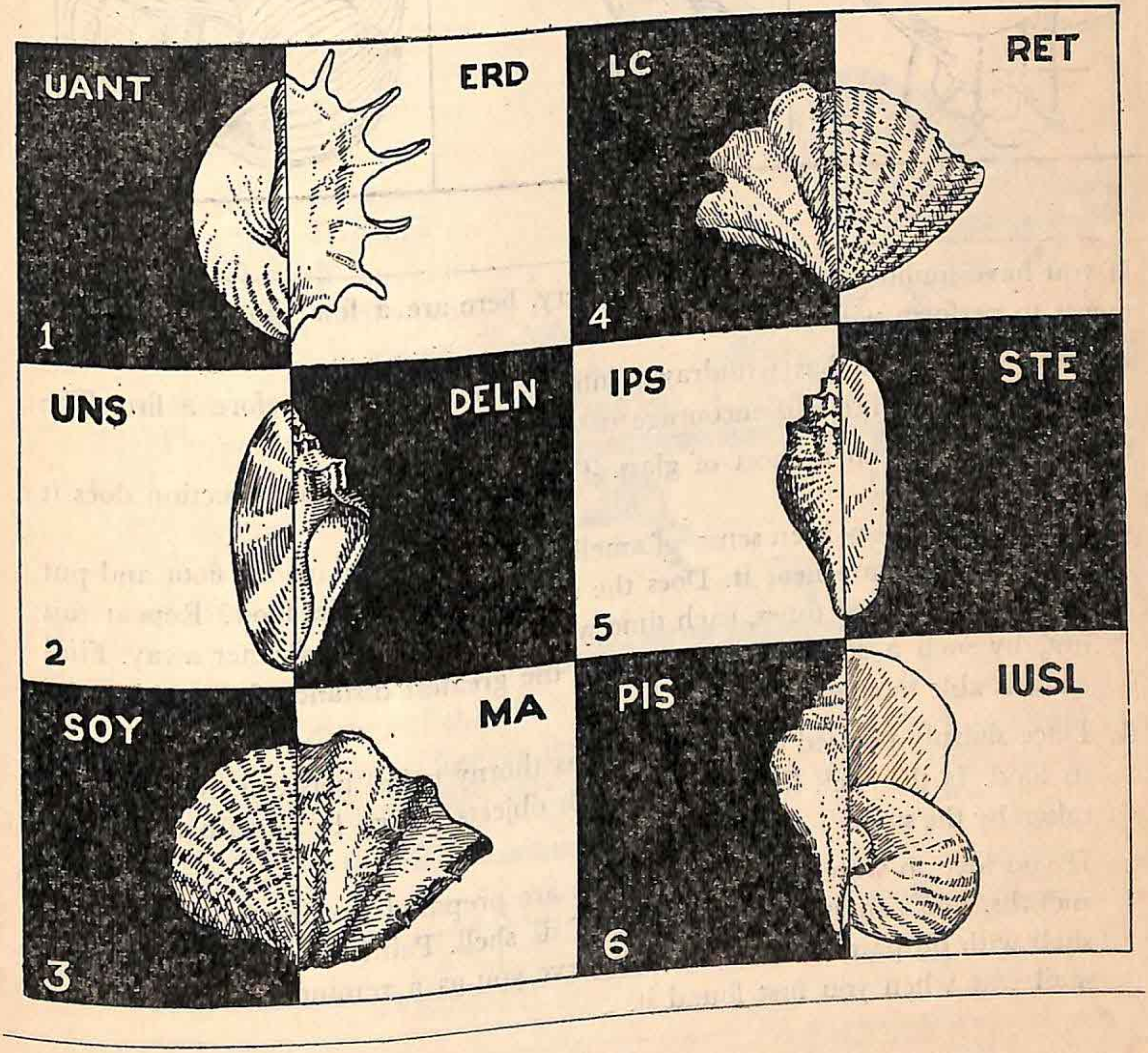


NAME______________________ CLASS__________ DATE__________

12

Snails and their Relatives

1. Match the halves of these pictures so that you have six complete shells. The letters in the half coloured black, when joined with its correct partner in the white half, will give you a jumbled spelling of the name of the shell. Write the name against its number on the line below.

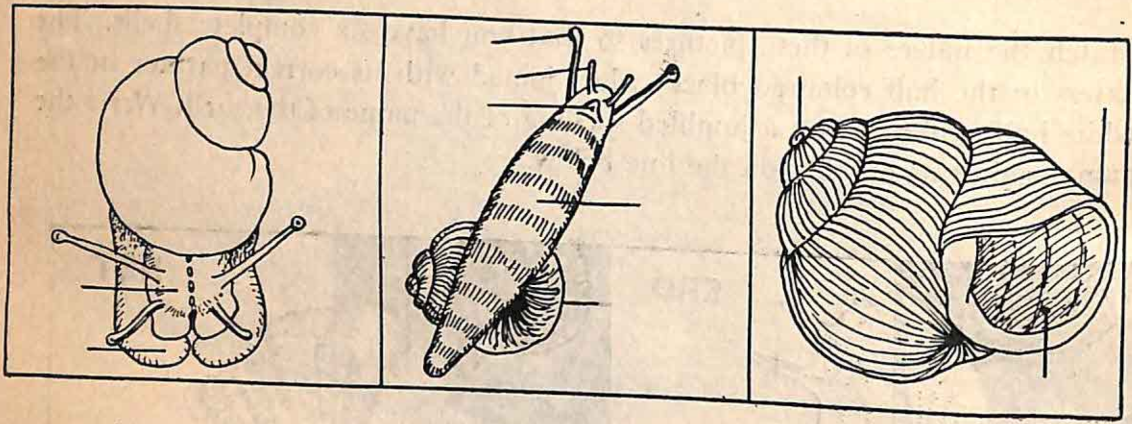


2. Each picture shows a snail in a different position.

a. Write on the line below each box the kind of view shown.

b. At the side of each guide line, write the name of the part to which it points.

c. In one picture two guide lines point to the shell. Mark **X** at the side of the line pointing to the oldest part, and mark **Y** at the side of the line pointing to the youngest part.



3. If you have found a snail for your snailery, here are a few interesting experiments to perform with it.

a. When your snail has withdrawn into its shell, place it before a fire. The warmth of the fire will encourage it to come out.

b. Put your snail on a sheet of glass. Tilt the glass. In what direction does it move?

c. Snails have a very keen sense of smell. Place your snail on the floor and put some sliced potato near it. Does the snail go towards its food? Repeat this experiment several times, each time with the food a little further away. Find out, by such a series of experiments, the greatest distance from which the snail is able to smell its food.

d. Place sharply pointed obstacles, such as thorny twigs, between the snail and its food. Is the snail frightened of such objects? Try to explain the action taken by the snail.

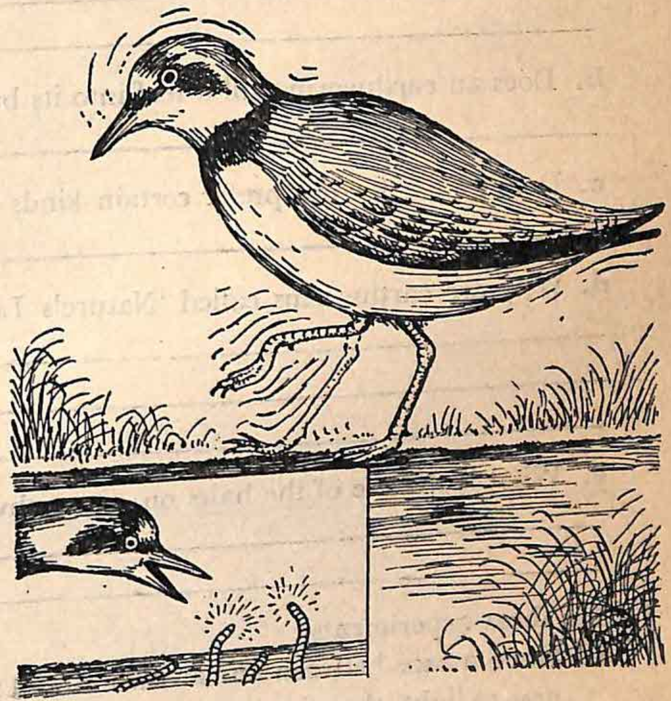
e. If you love to watch a snail, and you are prepared to care for it for many months, you can study the growth of its shell. Paint the outer edge of the shell with oil paint. The mark will serve you as a reminder of how old the snail was when you first found it.

NAME________________________________CLASS________________DATE______________

13

Burrowers in the Soil

1. After a shower of rain, mynas flock to the maidans. Whether you see them in pairs or in family parties you may be sure that they are feasting on earthworms. When rain falls on the earth, most of it goes into the soil. As the rain water floods the burrows of the earthworms, the poor creatures come up to the surface gasping for air. Earthworms dread the rain and the Little Ringed Plover knows this. It drums on the ground with one foot to make the earthworms believe that it is raining. Out they come and then the Plover has a hearty meal.



You can imitate the cunning of the Plover to gather worms for your wormery. Drive a wooden stake about a foot into the soil. Rub a board across the top of the stake. When the worms feel the shaking of the ground they will think that it is raining. Collect them when they come to the surface.

2. State three ways by which earthworms help plants.

i.____

ii.____

iii.____

3. Many creatures, such as earthworms, live in a world of darkness. Name:

a. Three creatures that make their homes in the ground.

i. ______________ **ii.** ______________ **iii.** ______________

b. Three creatures that live in the soil during the day and come out only at night to feed.

i. ______________ **ii.** ______________ **iii.** ______________

4. If you have kept a wormery you should find these questions easy to answer.

a. How does an earthworm make its burrow?

b. Does an earthworm pull a leaf into its burrow by the stalk or by its tip?

c. Does an earthworm prefer certain kinds of leaves to others?

d. Why are earthworms called 'Nature's Little ploughmen'?

e. What is the use of the hairs on an earthworm's body?

5. Try these experiments.

a. Have a race between an earthworm and a snail. Both creatures prefer darkness to light, therefore, have part of the racetrack in darkness.

b. Fill two flower-pots with soil, having first made sure that there are no earthworms in the soil. Plant two seedlings of the same kind of plant, and at the same stage in their development, one in each pot. Add several earthworms to one pot, none to the other. At the end of the month make notes on the appearance of the plant in each pot.

c. When you find a worm-cast in your garden, gently brush it away and look for the earthworm's burrow beneath.

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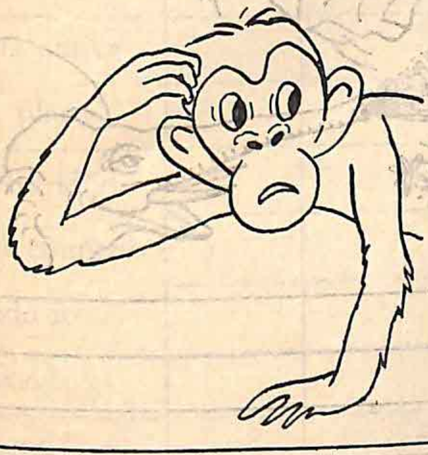
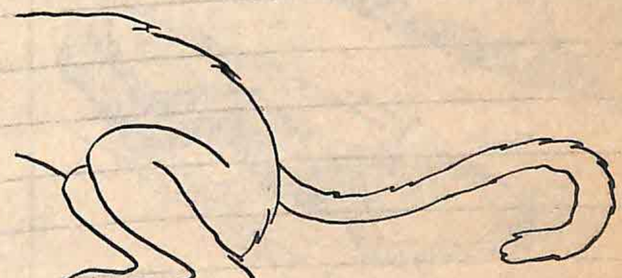
14

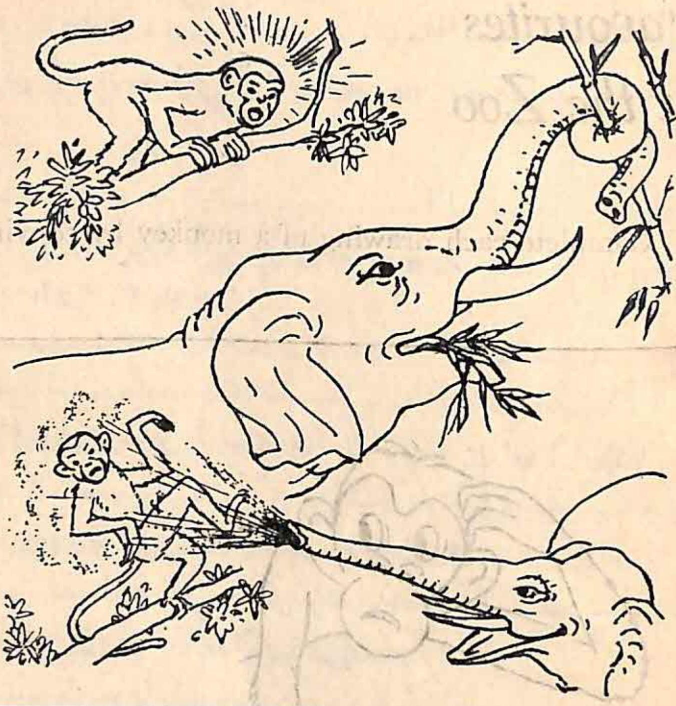
Favourites at the Zoo

1. Complete each drawing of a monkey by copying the other half of the monkey.





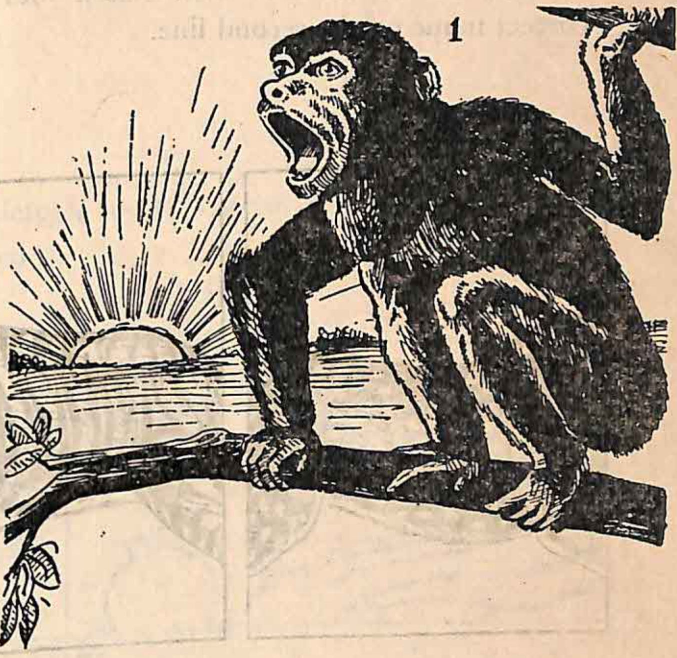
2. Colour this scene. Give the picture a caption and write a story about this mischievous monkey.



NAME________________ CLASS________ DATE________

3. Drawn for you on this page are two Indian monkeys. Look for them in the zoo. When you find them, study them. Then fill in this table.

	First Monkey	*Second Monkey*
English name		
Local name		
Colour		
Size		
Its native place		
The kind of countryside it likes		
Food		
How it is different from other monkeys		
What it was doing when you saw it		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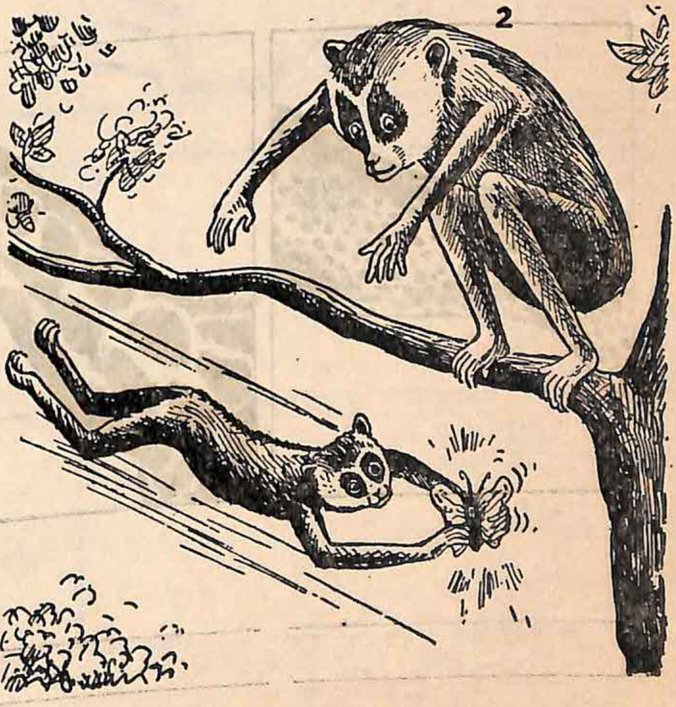
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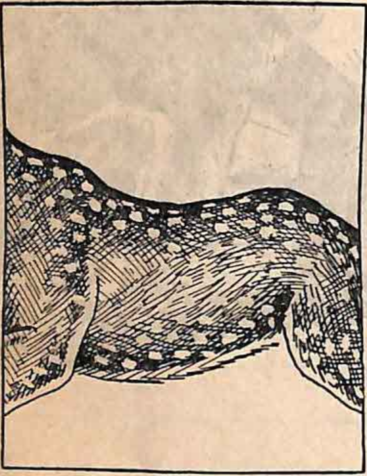
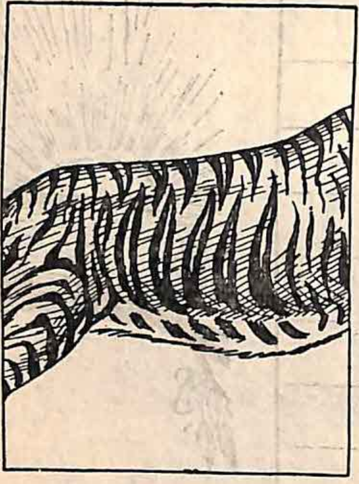
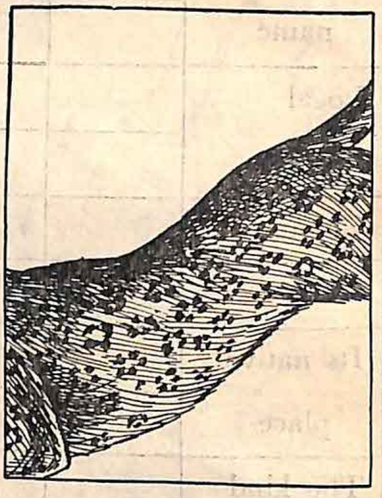
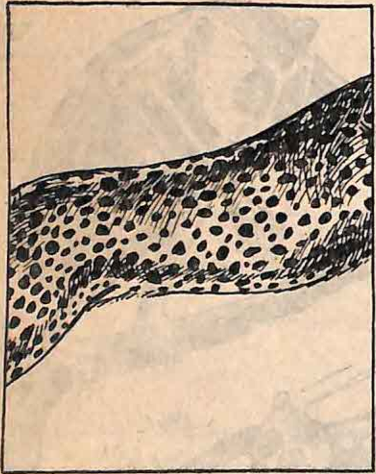
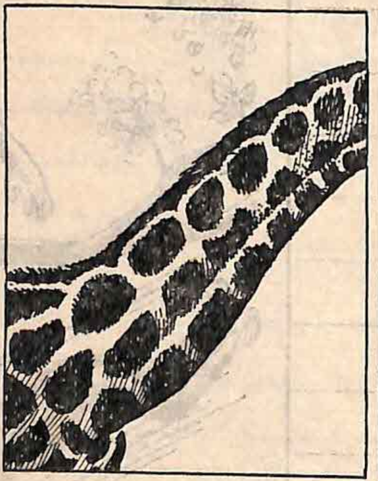
4. In each box is drawn the coat of a jungle animal. Guess the name of the animal and write it on the first line. Check your guesses at the zoo and write the correct name on the second line.

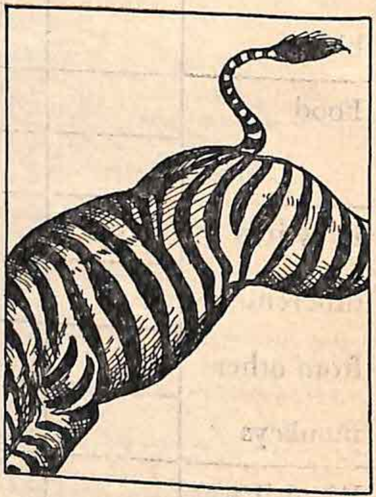












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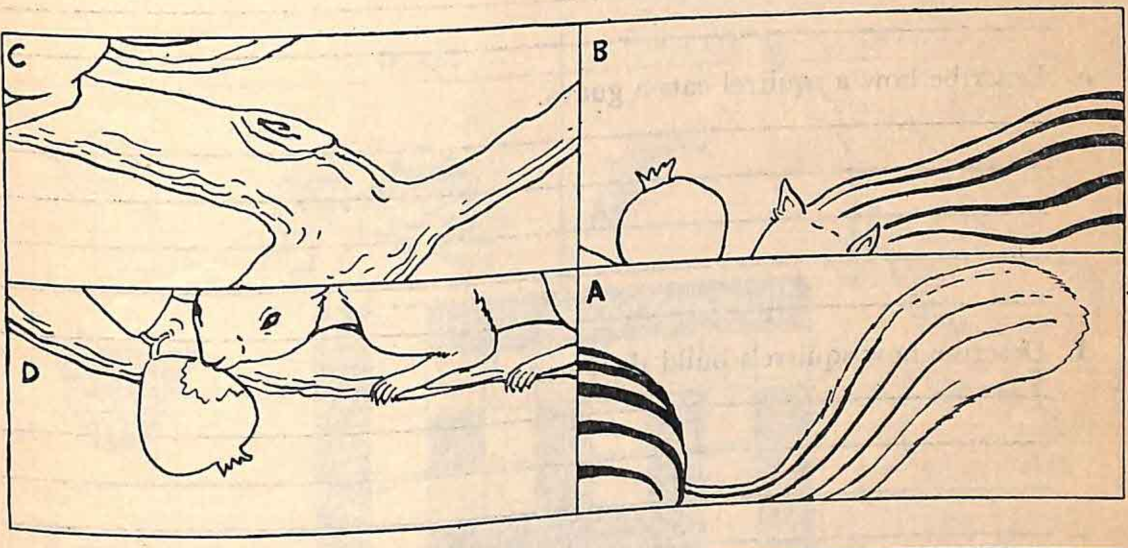
15

A Furry Animal

1. Draw each section of the four pictures in the correct box below. Colour the drawing when you have completed it.



B	A
D	C

2. Answer the following questions.

a. How does a squirrel climb down a tree?

b. What do squirrels eat?

c. Describe how a squirrel eats a guava.

d. Describe how squirrels build their nests.

e. How does the coat of a squirrel protect it from its enemies?

3. Name :

a. Three animals that gnaw their food.

i. ______ **ii.** ______ **iii.** ______

b. Two enemies of the squirrel.

i. ______ **ii.** ______

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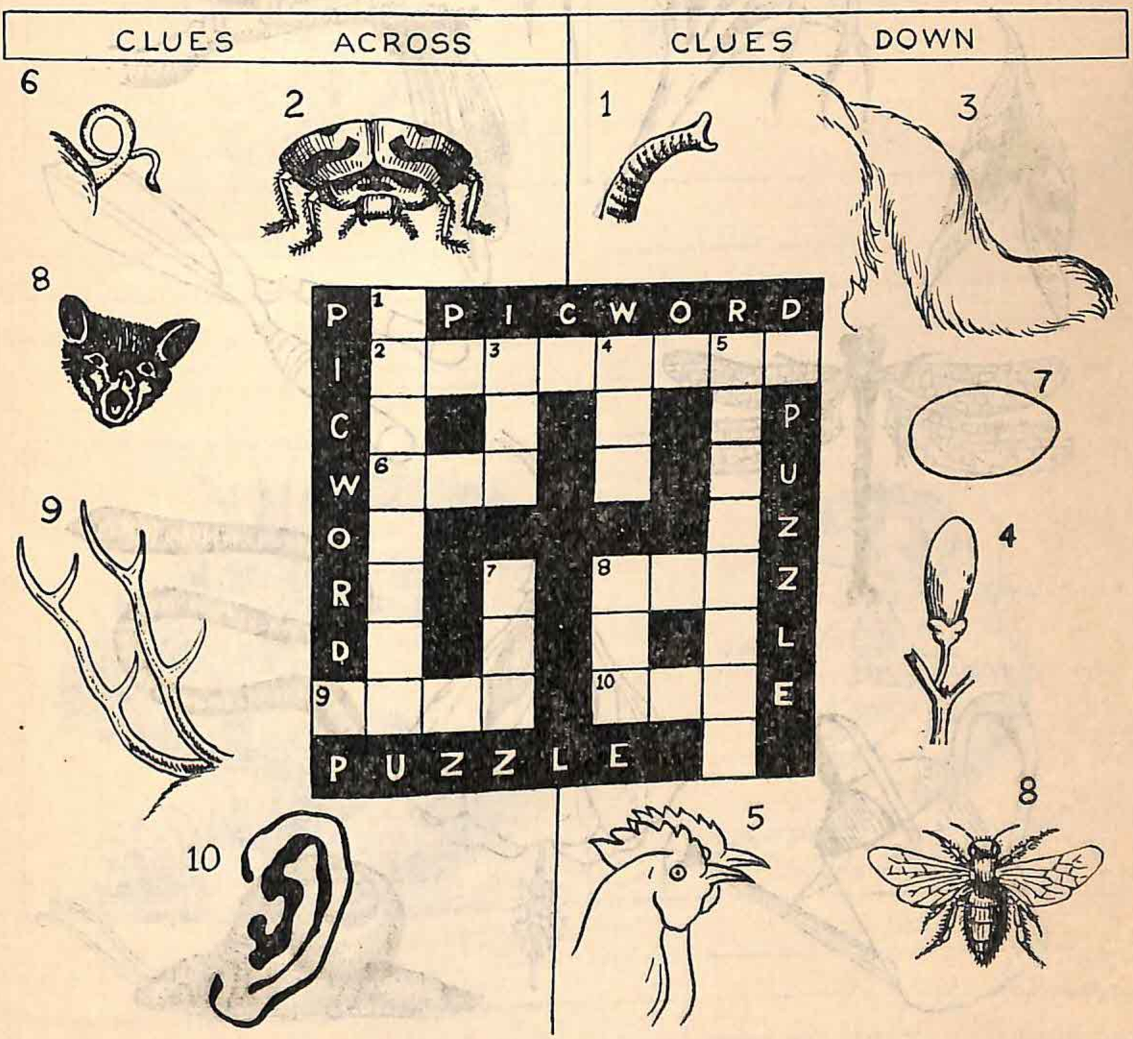
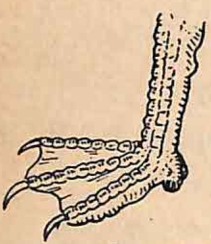
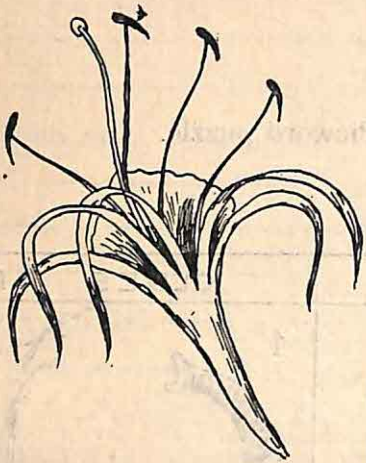
Test Yourself on the Year's Work

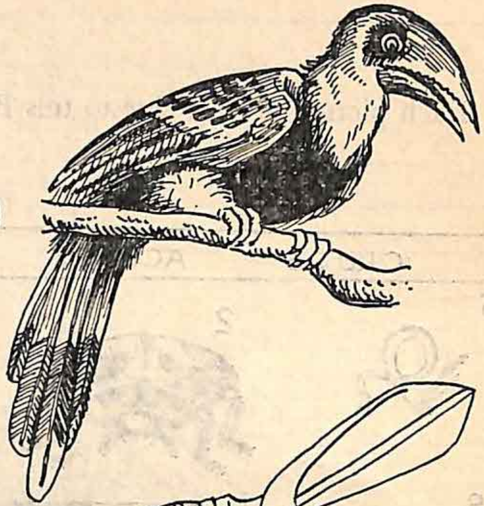
1. Each picture gives a clue to this Picword puzzle.

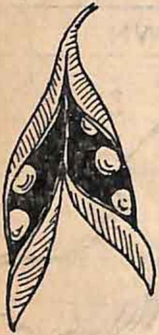


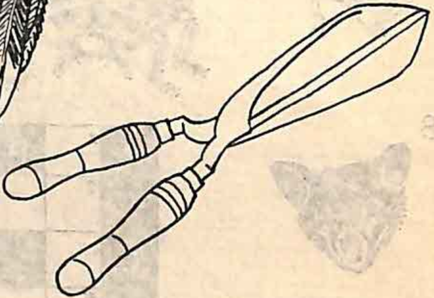
2. Something is missing from each drawing. Think what it is and draw it in. Name each drawing.

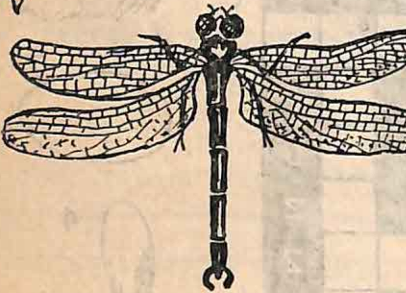


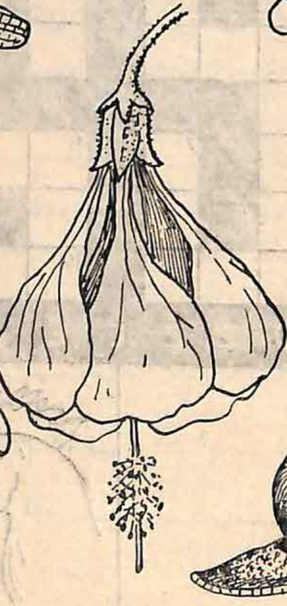


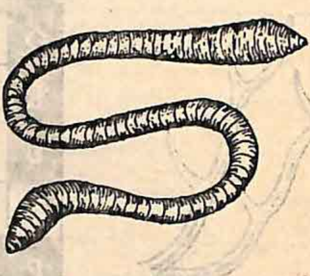


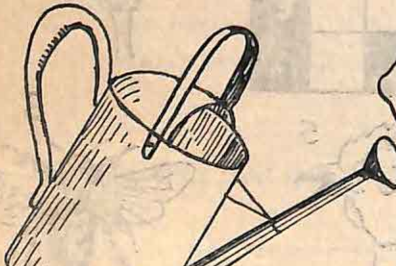


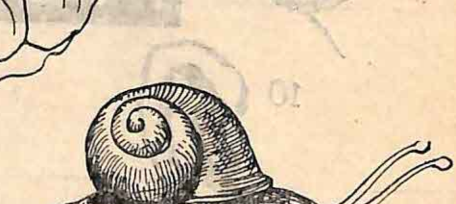






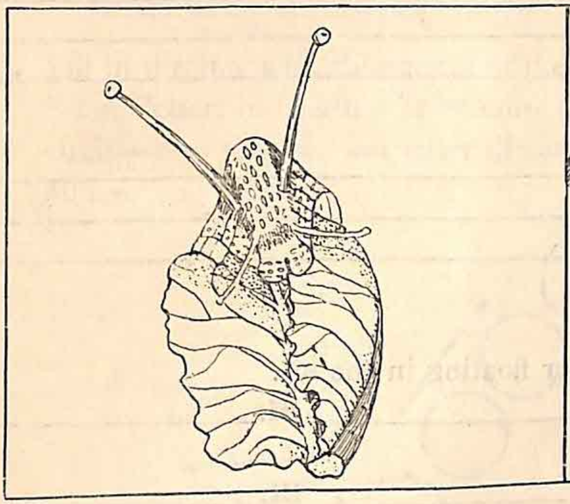


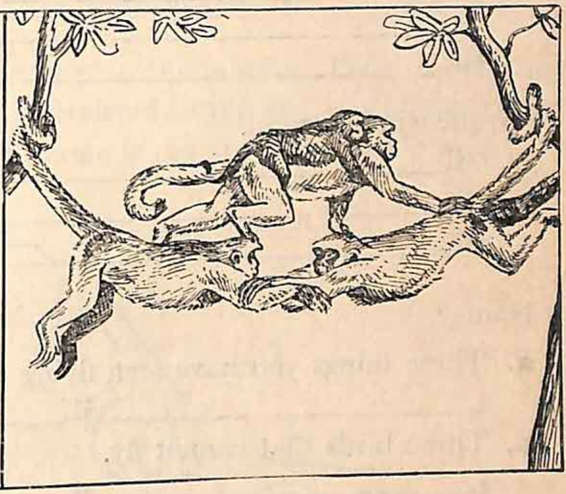


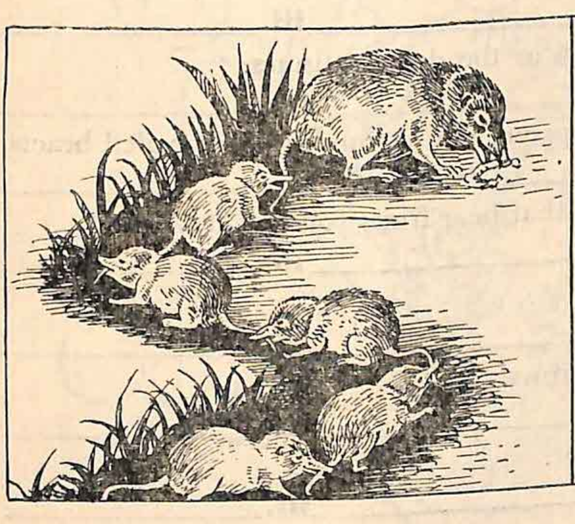


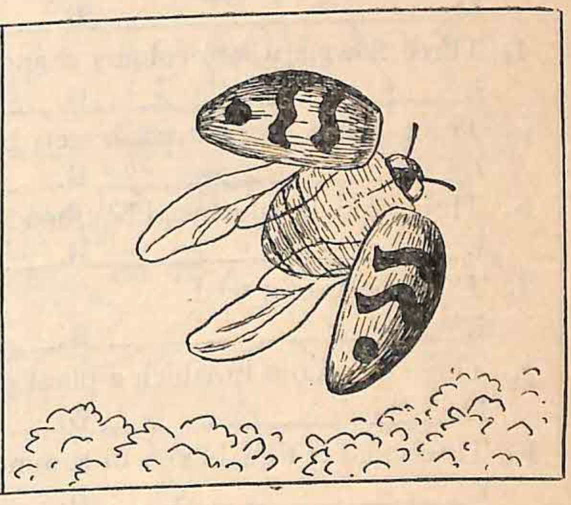
NAME______________________ CLASS__________ DATE__________

3. On the lines below each picture write the name of the animals and what they are doing.









4. Write down three occasions when you have found

(**a**) the wind helpful.

i. __________

ii. __________

iii. __________

(**b**) the wind harmful.

i. __________

ii. __________

iii. __________

5. Name :

a. Three things you have seen flying or floating in the air.

i. __________ **ii.** __________ **iii.** __________

b. Three birds that cannot fly.

i. __________ **ii.** __________ **iii.** __________

c. Three baby birds that are able to run about soon after birth.

i. __________ **ii.** __________ **iii.** __________

d. Three flowers whose sepals are coloured other than green.

i. __________ **ii.** __________ **iii.** __________

e. Three flowers whose stamens are coloured differently to their petals.

i. __________ **ii.** __________ **iii.** __________

f. Three flowers whose colours change as the day continues.

i. __________ **ii.** __________ **iii.** __________

g. Three plants that attract insects by specially coloured leaves called bracts.

i. __________ **ii.** __________ **iii.** __________

h. Three trees in your neighbourhood that bear fruits you can eat.

i. __________ **ii.** __________ **iii.** __________

i. Three parts of a seed.

i. __________ **ii.** __________ **iii.** __________

j. Three directions in which a plant grows.

i. __________ **ii.** __________ **iii.** __________

k. Three plants that bloom in summer.

i. __________ **ii.** __________ **iii.** __________

l. Three plants that bloom in winter.

i. __________ **ii.** __________ **iii.** __________

m. Three birds that are friends of the gardner.

i. __________ **ii.** __________ **iii.** __________

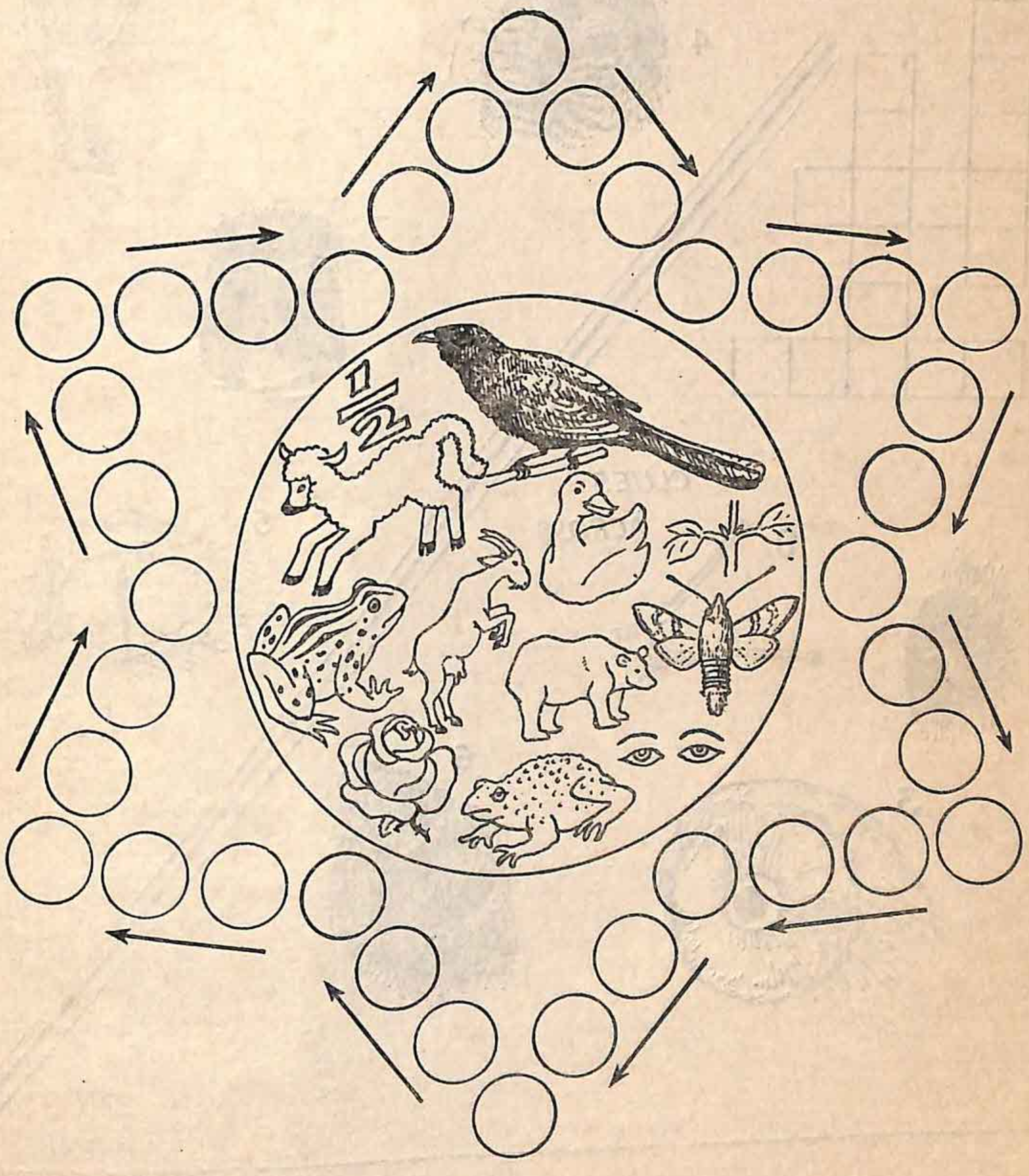
n. Three insects that are friends of the gardner.

i.________________ **ii.**________________ **iii.**________________

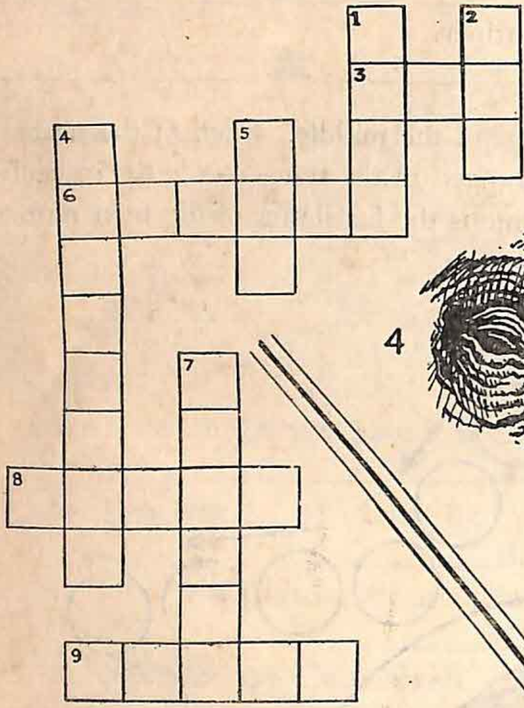
o. Three insects that are enemies of the gardner.

i.________________ **ii.**________________ **iii.**________________

6. Fill in the star with the names of the things in the middle. Each of the names is four letters in length. They must be arranged in the star——a letter in each circle——so that the last letter of each name is the first letter of the next name and so on.

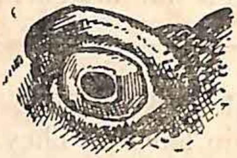


7. Whose eyes are these? Fill in the crossword puzzle with the names of the animals who are looking at you.



CLUES DOWN

1



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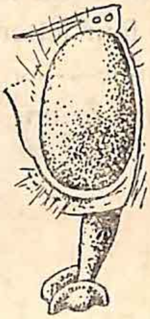

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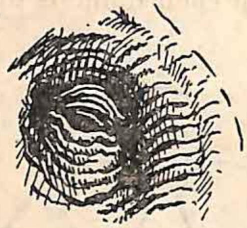

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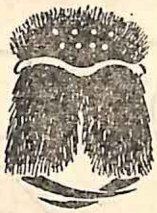

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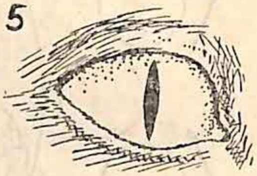
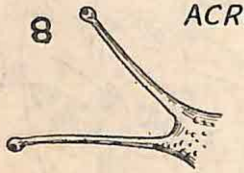


CLUES ACROSS

8



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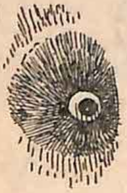

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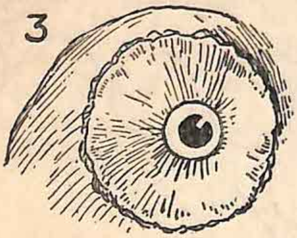

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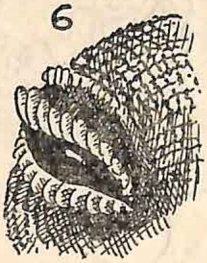

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